



# 2013 Medical Imaging

## Technical Program

[www.spie.org/mi](http://www.spie.org/mi)

### Location

Disney's Coronado Springs Resort  
Lake Buena Vista (Orlando Area)  
Florida, USA

### Conference and Courses

9–14 February 2013

### Technologies

- Physics of medical imaging
- Image processing
- Computer-aided diagnosis
- Image-guided procedures, robotic interventions, 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
- Ultrasonic imaging, tomography, and therapy
- Digital pathology **NEW**

# 2013 Medical Imaging

## Conference and Courses

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Disney's Coronado Springs Resort  
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Florida, USA

### Cooperating Organizations:

American Association of Physicists  
in Medicine

Computer Assisted Radiology and  
Surgery

Medical Image Perception Society

Radiological Society of North  
America

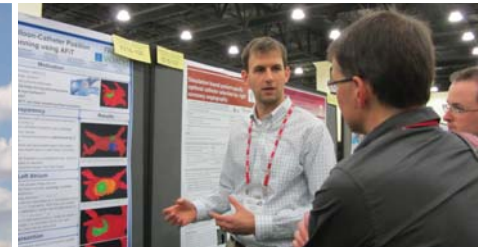
American Physiological Society

DICOM Standards Committee

Society for Imaging Informatics in  
Medicine

Society for Molecular Imaging

Florida Photonics Cluster



## Welcome to Lake Buena Vista

Welcome to the premier event for innovations in imaging—physics, image and signal processing, CAD, biomedical modeling, visualization, quantitative use of medical images, and new this year is digital pathology.

SPIE Medical Imaging is the place where collaboration brings ideas to life and technology to market. Hear the work, network with leaders in the field, and see the applications of the future.

Join us in Orlando for this premier event.



**Nico Karssemeijer**  
Radboud Univ. Nijmegen Medical  
Ctr. (Netherlands)



**Ehsan Samei,**  
Duke Univ. (USA)








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SPIE Conference App



SPIE is the international society for optics and photonics, a not-for-profit organization founded in 1955 to advanced light-based technologies. The Society serves nearly 225,000 constituents from approximately 150 countries, offering conferences, continuing education, books, journals, and a digital library in support of interdisciplinary information exchange, professional growth, and patent precedent. SPIE provided over \$3.3 million in support of education and outreach programs in 2012.



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### Technical Conferences

Mon-Thurs	<b>8668</b>	<b>Physics of Medical Imaging</b> (Nishikawa, Whiting) . . . 16
Sun-Tues	<b>8669</b>	<b>Image Processing</b> (Ourselin, Haynor) . . . . . 16
Tues-Thurs	<b>8670</b>	<b>Computer-Aided Diagnosis</b> (Novak, Aylward) . . . . . 16
Tues-Thurs	<b>8671</b>	<b>Image-Guided Procedures, Robotic Interventions, and Modeling</b> (Holmes, Yaniv) . . . . 16
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Tues-Thurs	<b>8674</b>	<b>Advanced PACS-based Imaging Informatics and Therapeutic Applications</b> (Law, Boonn) . . . . 17
Tues-Thurs	<b>8675</b>	<b>Ultrasonic Imaging, Tomography, and Therapy</b> (Bosch, Doyley) . . . . . 17
Sun-Mon	<b>8676</b>	<b>Digital Pathology</b> (Gurcan, Madabhushi) . . . . . 17

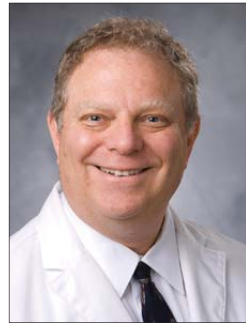
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Monday 11 February · 4:00 to 5:00 pm · Location: Coronado H

## Critical Path Technology: Volumetric Analyses in the Interpretation of CT Data

### Geoffrey D. Rubin, M.D.

George Barth Geller Professor of Radiology and Bioengineering  
Chair, Department of Radiology, Duke University Medical Center (USA)



Computed tomography has evolved from a planar to a volumetric imaging modality. Initiated in the 1990s by the introduction of spiral CT scanning, the evolution was complete with the development of multi-detector row CT scanners capable of acquiring clinically practical isotropic datasets. This capability has been accompanied by an explosion in imaging applications, particularly in the planning and monitoring of minimally invasive therapies. As an accurate characterization of the diseased anatomy is critical to the selection and sizing of medical devices, volumetric analyses, both qualitative and quantitative have become necessary elements of clinical CT examinations. This presentation will review the development, evolution, and application of volumetric analyses in CT and how they have become critical elements for maximizing the utility of the CT scan.

**Geoffrey D. Rubin, M.D.**, is the George Barth Geller Chair for Cardiovascular Research, the Chairman of the Department of Radiology at the Duke University School of Medicine, and Radiologist-in-Chief at Duke University Hospital. He received his Bachelor of Science with Honors from the California Institute of Technology in 1982, MD from the University of California at San Diego in 1987, and completed Radiology Residency and Body Imaging Fellowship Training at Stanford University in 1993. Following this fellowship, he joined the faculty of the Stanford University School of Medicine in 1993, where he was granted tenure in 2000 and promoted to Professor in 2005.

Dr. Rubin pioneered the use of spiral CT and multidetector-row CT for imaging the cardiovascular system and has personally performed and interpreted over 10,000 CT angiograms since 1991. In 1999, he founded the Stanford Radiology, Section of Cardiovascular Imaging and served as Section Chief until 2010.

In 1996 he co-founded the Stanford 3-D Medical Imaging Laboratory, serving as its Medical Director until 2010. The 3-D Laboratory developed and assessed the clinical role of computer graphics and computer vision applications to the analysis of medical imaging data and in latter years processed over 10,000 clinical examinations each year. The 3-D Laboratory also served as the imaging core lab for three pivotal trials of medical devices: the Aneurx Thoracic Aortic Stent-Graft, the Cook Zenith TX2 Endovascular Graft, and the Biosense-Webster NaviStar ThermoCool Catheter for the Radiofrequency Ablation of Paroxysmal Atrial Fibrillation. Dr. Rubin was the Principal Investigator for all three trials, coordinating imaging and image interpretation.

In 2005 he was appointed Associate Dean for Clinical Affairs in the Stanford University School of Medicine in 2005 and Associate Director of the Stanford Cardiovascular Institute. In May 2007, he was elected Vice Chief of Staff by the medical staff of Stanford Hospital and Clinics. He served in all three roles until August, 2010, when he moved to Duke University.

He currently serves as President of the Fleischner Society, President of the North American Society for Cardiovascular Imagers, and President of the Society for Computed Body Tomography and Magnetic Resonance.

He has served as the Principal Investigator of two NIH RO1s focused on imaging and analysis of cardiovascular and pulmonary diseases, "Measurement of the Aorta and its Branches" (1998-2003) and "Improving Radiologist Detection of Lung Nodules with CAD" (2004-present). Dr. Rubin is the author of over 165 peer-reviewed manuscripts and over 50 review articles and book chapters. He has edited five books, including the recently published textbook, CT and MR Angiography: Comprehensive Vascular Assessment.

He has been listed in "America's Top Doctors" and "Best Doctors in America" annually since 2002 and 2004, respectively. In 2008, he was awarded the "Most Effective Radiology Educator" award by AuntMinnie.com.

### Session Chairs:



**Nico Karssemeijer**  
Radboud Univ. Nijmegen  
Medical Ctr. (Netherlands)



**Ehsan Samei,**  
Duke Univ. (USA)

### Student Paper Awards

The first and second place winners of the Student Paper Award will be announced and conference finalists recognized. See page 3 for details.

Join us on Monday at 4:00 pm in the Coronado H Ballroom for the recognition of the conference finalists and an announcement of the first place winner and runner up.

### Congratulations Conference Finalists

The following student authors will advance to the final round of the Best Student Paper competition. Their papers were chosen from 40 submissions.

#### Physics of Medical Imaging (8668)

**Ke Li**, Univ. of Wisconsin School of Medicine and Public Health (USA)  
**How to determine detection performance of a DPC-CT system from a conventional cone beam CT system?** [8668-35]

#### Image Processing (8669)

**Pankaj Daga**, Univ. College London (United Kingdom)  
**Susceptibility artefact correction by combining B0 field maps and non-rigid registration using graph cuts** [8669-10]  
**Min Chen**, Johns Hopkins Univ. (USA)  
**Voxel-wise displacement as independent features in classification of multiple sclerosis** [8669-19]

#### Computer-Aided Diagnosis (8670)

**Mark J. J. P. van Grinsven**, Radboud Univ. Nijmegen Medical Ctr. (Netherlands)  
**Automatic age-related macular degeneration detection and staging** [8670-21]

#### Image-Guided Procedures, Robotic Interventions, and Modeling (8671)

**Sureerat Reangamornrat**, Johns Hopkins Univ. (USA)  
**Deformable registration for cone-beam CT guidance of robot-assisted, trans-oral base-of-tongue surgery** [8671-19]

#### Biomedical Applications in Molecular, Structural, and Functional Imaging (8672)

**Seyed Reza Mousavi**, The Univ. of Western Ontario (Canada)  
**A full inversion unconstrained ultrasound elastography technique for prostate cancer assessment** [8672-59]

#### Image Perception, Observer Performance, and Technology Assessment (8673)

**Michael Ghaly**, Johns Hopkins Univ. (USA)  
**Model mismatch and the ideal observer in SPECT** [8673-19]

#### Ultrasonic Imaging and Signal Processing (8675)

**Man Nguyen**, Philips Research North America (USA)  
**Pulmonary ultrasound elastography: a feasibility study with phantoms and ex-vivo tissue** [8675-2]

#### Digital Pathology (8676)

**Asha Singanamalli**, Case Western Reserve Univ. (USA)  
**Identifying in vivo DCE MRI Parameters Correlated with ex vivo Quantitative Microvessel Characteristics: A Radiohistomorphometric Approach** (8676-3)

### Dessert with the Experts

*A Student Networking Event*

Monday 11 February  
 6:30 to 7:30 pm · Location: Casitas Courtyard  
 First come, first served.

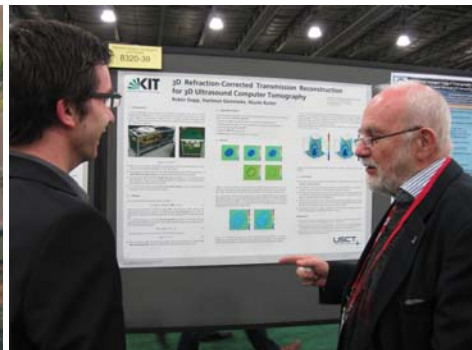
Enjoy a tasty dessert and casual atmosphere while networking with some of the best and brightest minds in medical imaging. Exchange ideas, share experiences, and make valuable contacts at this complimentary student event.

### Women's Networking Lunch

Tuesday 12 February · 12:10 to 1:20 pm  
 Location: La Mesa Patio

Lunch tickets required. Sign-up at registration required before coffee break on Tuesday. Space is limited. First come, first served.

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



Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
9 February	10 February	11 February	12 February	13 February	14 February
SC1063 <b>Diffusion Imaging</b> (Klein, Fritzsche) 8:30 am to 12:30 pm, \$335 / \$385	SC987 <b>Spectral CT Imaging</b> (Heismann, Schmidt, Flohr) 8:30 am to 12:30 pm, \$335 / \$385	KEYNOTE PRESENTATION: 8668 <b>Volumetrics of the brain: a tale of missiles, mice, rain, hydrocephalus, and epilepsy</b> (Schiff) 8:00 am, p. 8	KEYNOTE PRESENTATION: 8669 <b>Biomedical imaging in personalized medicine</b> (Comaniciu) 10:10 am, p. 8	KEYNOTE PRESENTATION: 8675 <b>Ultrasound strain imaging for quantification of tissue function: cardiovascular and muscle applications</b> (de Korte) 8:00 am, p. 9	KEYNOTE PRESENTATION: 8669 <b>The digital operating room: towards intelligent infrastructures and processes</b> (Lemke) 10:10 am, p. 9
SC086 <b>Fundamentals of Medical Image Processing and Analysis</b> (Deserno) 8:30 am to 5:30 pm, \$545 / \$635	KEYNOTE PRESENTATION: 8673 <b>Optimizing visual search: How does the brain do it?</b> (Eckstein) 8:00 am, p. 9	KEYNOTE PRESENTATION: 8672 <b>Characterizing and utilizing fMRI fluctuations, patterns, and dynamics</b> (Bandettini) 10:10 am, p. 8		SC1026 <b>Graph Algorithmic Techniques for Biomedical Image Segmentation</b> (Garvin) 8:30 am to 12:30 pm, \$335 / \$385	
SC1094 <b>ImageJ Part 1: The GUI and Macro Programming with Applications to Image Processing and Image Analysis</b> (VanMetter) 8:30 am to 12:30 pm, \$335 / \$385				PANEL DISCUSSION: 8670 <b>Challenges in CAD development and commercialization</b> , 10:10 am, p. 8	
SC471 <b>Principles and Advancements in X-ray Computed Tomography</b> (Hsieh) 8:30 am to 12:30 pm, \$425 / \$475	<b>8668 Physics of Medical Imaging</b> (Conference Chairs: Robert M. Nishikawa, Bruce R. Whiting) p. 16				
SC1065 <b>Exploring Brain Connectivity in-vivo: from Theory to Practice</b> (Pujol, Styner, Gerig) 1:30 pm to 5:30 pm, \$335 / \$385	<b>8669 Image Processing</b> (Conference Chairs: Sebastien Ourselin, David R. Haynor) p. 16		<b>8672 Biomedical Applications in Molecular, Structural, and Functional Imaging</b> (Conference Chairs: John B. Weaver, Robert C. Molthen) p. 16		
SC1095 <b>ImageJ Part 2: Plugin Programming with Applications to Image Processing and Image Analysis</b> (VanMetter) 1:30 pm to 5:30 pm, \$335 / \$385	<b>8673 Image Perception, Observer Performance, and Technology Assessment</b> (Conference Chairs: Craig K. Abbey, Claudia R. Mello-Thoms) p. 17		<b>8670 Computer-Aided Diagnosis</b> (Conference Chairs: Carol L. Novak, Stephen Aylward) p. 16		
SC829 <b>MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU)</b> (Mueller, Papenhausen) 1:30 pm to 5:30 pm, \$335 / \$385	<b>8676 Digital Pathology</b> <sup>NEW</sup> (Conference Chairs: Metin N. Gurcan, Anant Madabhushi) p. 17		<b>8671 Image-Guided Procedures, Robotic Interventions, and Modeling</b> (Conference Chairs: David R. Holmes III, Ziv R. Yaniv) p. 16		
WS776 <b>Writing for Publication in Medical Imaging</b> (Hanson) 8:30 am to 12:30 pm, \$100 / \$150	Meet the NIH Staff 1:30 to 3:30 pm, p. 10		<b>8674 Advanced PACS-based Imaging Informatics and Therapeutic Applications</b> (Conference Chairs: Maria Y. Law, William Boonn) p. 17		
WS757 <b>Early Career Professional Development in Medical Imaging</b> (Krupinski) 1:30 pm to 5:30 pm, \$100 / \$150			<b>8675 Ultrasonic Imaging, Tomography, and Therapy</b> (Conference Chairs: Johan G. Bosch, Marvin M. Doyley) p. 17		
	<b>Sunday/Monday Poster Session</b>		<b>Tuesday/Wednesday Poster Session</b>		
	KEYNOTE PRESENTATION: 8676 <b>Dawn of the digital diagnosis assistance system, can it open a new age of pathology?</b> (Saito) 1:20 pm, p. 9	<b>All Conference Plenary and Awards Session</b> , 4:00 to 5:00 pm, p. 2 <b>Student Paper Awards</b>	<b>Women's Networking Lunch</b> , 12:10 to 1:20 pm, p. 3	KEYNOTE PRESENTATION: 8671 <b>Patient and process specific imaging and visualization for computer assisted interventions</b> (Navab) 1:20 pm, p. 8	
	SC358 <b>X-Ray Detector Performance and DQE: Principles and Measurements using a Linear-Systems Approach</b> (Cunningham) 1:30 pm to 5:30 pm, \$335 / \$385	 Plenary Presentation: <b>Critical Path Technology: Volumetric Analyses in the Interpretation of CT DataInnovation and Translation</b> (Rubin)	TUESDAY TECHNICAL WORKSHOPS 5:00 to 7:00 pm, p. 10-11 Conf. 8668: <b>Phase Contrast X-ray Imaging</b> (Pelc) Conf. 8669: <b>When Computer Vision Meets Medical Imaging</b> (Ourselin)	KEYNOTE PRESENTATION: 8675 <b>New developments in vector velocity imaging using the transverse oscillation approach</b> (Jensen) 3:30 pm, p. 9	
	WS1024 <b>Medical Imaging: From Concept to Market</b> (Analoui) 1:30 pm to 5:30 pm, \$335 / \$385	<b>Interactive Poster Session and Reception</b> , 5:00 to 6:30 pm, p. 13	Conf. 8670: <b>Live Demonstrations</b> Conf. 8671: <b>The Image-Guided Surgery Toolkit (IGSTK) a Resource for Researchers, Entrepreneurs, and Educators</b> (Yaniv)	Interactive Poster Session and Reception, 5:30 to 7:00 pm, p. 13	
	TECHNICAL WORKSHOP 5:45 to 7:45 pm, Conf. 8673: <b>ROC Analysis: A tribute to Charlie Metz and an assessment of the State of the Art</b> (Jiang, Abbey, Mello-Thoms), p. 10	<b>Dessert with the Experts—A Student Networking Event</b> , 6:30 to 7:30 pm, p. 3	Conf. 8674: <b>DICOM</b> (Horii)		
	NONTECHNICAL WORKSHOP 5:45 to 7:45 pm, <b>Preparing a Competitive NIH Application</b> (Gill), p. 10				

**SPIE STUDENT MEMBERS** receive **50% OFF** all courses and workshops.

# Daily Conference Session Schedule

TIME	Conference 8668	Conference 8669	Conference 8670	Conference 8671	Conference 8672	Conference 8673	Conference 8674	Conference 8675	Conference 8676
<b>SUNDAY · 10 February</b>									
Sun. 8:00 to 9:40 am		SESSION 1: Segmentation			SESSION 1: Novel Sensing and Imaging Methods	SESSION 1: Keynote and Visual Search			
9:40 to 10:10 am	Coffee Break								
10:10 am to 12:10 pm		SESSION 2: DTI/Functional			SESSION 2: Cardiovascular	SESSION 2: Image Perception			
12:10 to 1:20 pm	Lunch Break								
1:20 to 3:00 pm		SESSION 3: Shape Appearance			SESSION 3: Image Analysis and Morphology	SESSION 3: ROC			SESSION 1: Keynote and New Trends
3:30 to 5:30 pm		SESSION 4: Temporal and Motional Analysis			SESSION 4: Brain Imaging and Therapy	SESSION 4: Model Observers			
5:45 to 7:45 pm	Technical Workshops								
<b>MONDAY · 11 February</b>									
Mon. 8:00 to 9:40 am	SESSION 1: Keynote and Volumetrics of the Brain	SESSION 5: OCT and Ultrasound			SESSION 5: fMRI	SESSION 5: Tech Assessment			SESSION 2: Detection, Segmentation
9:40 to 10:10 am	Coffee Break								
10:10 am to 12:10 pm	SESSION 2: X-ray Imaging	SESSION 6: Lung			SESSION 6: Keynote and fMRI and Brain Imaging	SESSION 6: Observer Performance: Breast			SESSION 3: Registration, Reconstruction, Tracking
12:10 to 1:20 pm	Lunch Break								
1:20 to 3:40 pm	SESSION 3: Tomosynthesis	SESSION 7: Registration			SESSION 7: Pulmonary Imaging	SESSION 7: Observer Performance: General			SESSION 4: Quality Control, IHC Analysis
3:40 to 4:00 pm	Coffee Break					POSTER AWARD ANNOUNCEMENTS			POSTER AWARD ANNOUNCEMENTS
4:00 to 5:00 pm	Best Student Paper Awards and Plenary Presentation								
5:00 to 6:30 pm	Sunday/Monday Interactive Poster Session and Reception								



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# Daily Conference Session Schedule

TIME	Conference 8668	Conference 8669	Conference 8670	Conference 8671	Conference 8672	Conference 8673	Conference 8674	Conference 8675	Conference 8676
<b>TUESDAY · 12 February</b>									
Tues. 8:00 to 9:40 am	SESSION 4: Metrology/Phantoms I	SESSION 8: Segmentation and Localization	SESSION 1: Novel/Other CAD Applications	SESSION 1: Laparoscopy/Endoscopy/Bronchoscopy	SESSION 8: Optical Imaging				
9:40 to 9:45 am		POSTER AWARD ANNOUNCEMENTS			POSTER AWARD ANNOUNCEMENTS				
9:40 to 10:10 am	Coffee Break								
10:10 am to 12:10 pm	SESSION 5: Photon Counting	SESSION 9: Keynote and 2D-3D Registration	SESSION 2: Musculoskeletal CAD	SESSION 2: Abdominal Procedures	SESSION 9: Nanoparticle Imaging and Sensing				
12:10 to 1:20 pm	Lunch Break								
1:20 to 3:00 pm	SESSION 6: Tomosynthesis Reconstruction	SESSION 10: Statistics of Images and Structures	SESSION 3: Lung CAD I	SESSION 3: Cardiothoracic and Radiotherapy Procedures	SESSION 10: Elastography Methods: Joint SESSION with Conferences 8672 and 8675			SESSION 1: Elastography Methods: Joint SESSION with Conferences 8672 and 8675	
3:00 to 3:30 pm	Coffee Break								
3:30 to 4:50 pm	SESSION 7: Phase Contrast I	SESSION 11: Label Fusion	SESSION 4: Lung CAD II	SESSION 4: Head and Neck Procedures	SESSION 11: Elastography: MSK Applications: Joint SESSION with Conferences 8672 and 8675			SESSION 2: Elastography: MSK Applications: Joint Session with Conferences 8672 and 8675	
5:00 to 7:00 pm	Technical Workshops								
<b>WEDNESDAY · 13 February</b>									
Wed. 8:00 to 9:40 am	SESSION 8: Phase Contrast II		SESSION 5: Eye CAD	SESSION 5: Visualization and Segmentation	SESSION 12 Keynote and Ultrasound and MR Elastography: Joint SESSION with Conferences 8672 and 8675		SESSION 1: Advanced PACS-based Radiology Workflow I	SESSION 3: Keynote and Ultrasound and MR Elastography: Joint Session with Conferences 8672 and 8675	
9:40 to 10:10 am	Coffee Break								
10:10 am to 12:10 pm	SESSION 9: Cone Beam CT		SESSION 6: Panel Discussion and Head and Neck I	SESSION 6: Simulation and Modeling			SESSION 2: Advanced PACS-based Radiology Workflow II	SESSION 4: Ultrasound Image Analysis	
12:10 to 1:20 pm	Lunch Break								



# Daily Conference Session Schedule

TIME	Conference 8668	Conference 8669	Conference 8670	Conference 8671	Conference 8672	Conference 8673	Conference 8674	Conference 8675	Conference 8676
<b>WEDNESDAY Afternoon · 13 February</b>									
1:20 to 3:00 pm	SESSION 10: Metrology/Phantoms II		SESSION 7: Gastrointestinal and Liver CAD	SESSION 7: Keynote and Orthopedic Procedures			SESSION 3: Medical Image Sharing and Exchange	SESSION 5: Transducers and Front-End Systems	
3:00 to 3:50 pm	Coffee Break								
3:50 to 5:30 pm	SESSION 11: CT Reconstructions		SESSION 8: Head and Neck CAD II	SESSION 8: Registration and Tracking			SESSION 4: Quantitative Analysis and Diagnostics, Knowledge, Search and Data Mining	SESSION 6: Keynote and Vector Velocity Imaging and Doppler	
5:30 to 7:00 pm	Tuesday/Wednesday Poster SESSION								
<b>THURSDAY · 14 February</b>									
Thurs. 8:00 to 9:40 am	SESSION 12 CT Design		SESSION 9: Cardiovascular CAD	SESSION 9: Robotics and Needle Procedures			SESSION 5: Therapeutic Applications and Extending Imaging Informatics beyond Radiology	SESSION 7: Ultrasound Tomography and Acoustic Microscopy	
9:40 to 9:45 am	POSTER AWARD ANNOUNCEMENTS		POSTER AWARD ANNOUNCEMENTS	POSTER AWARD ANNOUNCEMENTS			POSTER AWARD ANNOUNCEMENTS	POSTER AWARD ANNOUNCEMENTS	
9:40 to 10:10 am	Coffee Break								
10:10 to 11:30 am	SESSION 13: Multi-energy CT		SESSION 10: Breast CAD I	SESSION 10: Keynote and Digital Operating Room and Knowledge Integration in the OR: Joint SESSION Conferences 8671 and 8674			SESSION 6: Keynote and Digital Operating Room and Knowledge Integration in the OR: Joint SESSION Conferences 8671 and 8674	SESSION 8: Ultrasound Beamforming	
11:30 am to 12:10 pm									
12:10 to 1:20 pm	Lunch Break								
1:20 to 3:00 pm	SESSION 14: Mammography		SESSION 11: Prostate and Oncology	SESSION 11: Ultrasound Image Guidance: Joint SESSION with Conferences 8671 and 8675				SESSION 9: Ultrasound Image Guidance: Joint SESSION with Conferences 8671 and 8675	
3:00 to 3:30 pm	Coffee Break								
3:30 to 5:30 pm	SESSION 15: Dose		SESSION 12: Breast CAD II	SESSION 12: Novel Imaging, Procedures, and Devices				SESSION 10: Elastography and Novel Applications	

Don't miss these world-class speakers talking on the latest directions and most promising breakthroughs.

Keynote Sessions are open to all paid conference attendees.

## Computer-Aided Diagnosis PANEL DISCUSSION

Conference 8670  
Wednesday, 10:10 am

## Challenges in CAD development and commercialization

- Is CAD gaining momentum in clinical practice? If not, why not?
- Is CAD gaining momentum in research? If not, why not? If yes, are the right challenges being addressed?
- Is CAD research impacting commercial and clinical efforts? If not, why not?
- Should CAD output be archived? Will archiving CAD output lead to more malpractice lawsuits or will it minimize the number and impact of malpractice lawsuits?
- Is there an impression in research or in clinics that CAD lacks scientific rigor and is second class citizen as a research topic and/or diagnostic tool?

## Physics of Medical Imaging

Conference 8668  
Monday, 8:00 am

### Volumetrics of the brain: a tale of missiles, mice, rain, hydrocephalus, and epilepsy [8668-1]



**Steven J. Schiff**  
The Pennsylvania State Univ.  
(USA)

The growth of brain and its structures, and the dynamics of cerebrospinal fluid accumulation, are critical phenomena to characterize in order to develop predictive therapy of hydrocephalus, as well as to explore the use of CT to substitute for MRI in the developing world where MRI technology is infeasible. We explore murine hydrocephalus at high field strength MRI, and follow with the development of a particle filter segmentation tool that creates a pathway towards automated use in clinical settings. We develop normative human growth curves of brain and cerebrospinal fluid, and apply such normative curves to hydrocephalus and neurocognitive development. Lastly, we explore the intersection of brain volume and asymmetry of lobar volumes to predict the outcome of epilepsy surgical resection. A forthcoming NIH Phase III randomized controlled surgical trial in East Africa will employ these methods for the evaluation of alternative methods of treating postinfectious hydrocephalus, where a strong connection to climate rainfall dynamics has recently been shown. Our near-term goal is to evolve these volumetric methods from a research tool to an automated 3D segmentation strategy that can be readily incorporated in clinical settings.

**Biography:** **Steven J. Schiff**, Brush Chair Professor of Engineering and Director of the Penn State Center for Neural Engineering, is a faculty member in the Departments of Neurosurgery, Engineering Science and Mechanics, and Physics. A Pediatric Neurosurgeon with particular interests in Epilepsy, he holds a PhD in Physiology, and an MD, from Duke University.

## Image Processing

Conference 8669  
Tuesday, 10:10 am

### Biomedical imaging in personalized medicine [8669-46]



**Dorin Comaniciu**  
Siemens Corporate Research  
(USA)

Personalized medicine's focus is to do more in advance, promote early detection of the disease, more efficient clinical workflows, and provide patient-centric health management. This talk will analyze three dimensions of biomedical imaging for personalized medicine: knowledge-based imaging, real-time analysis and guidance in the OR, and in-silico modeling of the body function and disease. We will underline the detailed quantification of volumetric data through its parsing into hundreds of semantic components. We will show that multimodal and real-time imaging are at the base of a new generation of minimally invasive procedures with increased degree of automation. Finally, we will present individualized cardiac models with predictive power, including patient's anatomy, dynamics, hemodynamics and biomechanics. By highlighting example applications that make today a difference in hospitals we will extrapolate on the imaging technology potential, expectations for the near future, and the increased demand for multidisciplinary projects and applications.

**Biography:** **Dorin Comaniciu** is Head of Imaging and Computer Vision at Siemens Corporate Technology, Princeton, New Jersey. He has global responsibility to oversee research, create advanced technology, and transfer innovative solutions to Siemens businesses.

## Image-Guided Procedures, Robotic Interventions, and Modeling

Conference 8671  
Wednesday, 1:20 pm

### Patient and process specific imaging and visualization for computer assisted interventions [8671-32]



**Nassir Navab**  
Technische Univ.  
München (Germany)

In this talk, I will focus on the need for development of novel imaging techniques for patient and process specific intra-operative imaging and present some of our latest results as exemplary cases. As such novel intra-operative and multi-modality imaging techniques provide the surgical crew with rich co-registered information, their appropriate visualization and their integration into surgical workflow, their validation and finally their full deployment are becoming active subjects of research in our community. I will in particular trace the Freehand SPECT and Camera Augmented Mobile C-arm (CAMC) from the early development of research ideas within our multi-disciplinary research laboratories to their deployment in different surgical suites. In addition, I will present our efforts in development and integration of novel ultrasound imaging techniques into various image guided procedures. I will finally focus on the needs for simulation and advanced visualization not only in computer assisted interventions, but also in medical education and training.

**Biography:** **Nassir Navab** is Head, Chair for Computer Aided Medical Procedures & Augmented Reality, Fakultät für Informatik, Technische Universität München, Secondary appointment School of Medicine, Technische Universität München; Co-Founder & Chief Scientific Officer (CSO) SurgicEye GmbH; Associate Editor: IEEE Transactions on Medical Imaging; Associate Editor: Medical Physics; Editorial Board: Medical Image Analysis; Board of Directors (2006-2011) Medical Image Computing and Computer Assisted Intervention (MICCAI) Society.

## Biomedical Applications in Molecular, Structural, and Functional Imaging

Conference 8672  
Monday, 10:10 am

### Characterizing and utilizing fMRI fluctuations, patterns, and dynamics [8672-28]



**Peter A. Bandettini**  
Javier Gonzalez-Castillo,  
Prantik Kundu, Yang, Zhi,  
Masaya Misaki, Souheil  
Inati, National Institute of  
Health (USA)

On first impression, the sluggishness and messiness of the hemodynamic-based fMRI signal suggests that it is a rather blunt instrument for the study of neuroscience. Nevertheless, a wide range of methods have been developed over the years that have been able to extract exquisitely detailed neuronal information as well as correlates to extremely subtle behavior.

Currently, the fMRI methods community is struggling with several over-riding issues in fMRI processing that range from artifact elimination to the derivation of robust subject-specific biomarkers to furthering the spatial resolution, temporal resolution, and sensitivity. In this talk I highlight these issues and discuss some relevant contributions of our lab.

Overall, I will hopefully demonstrate that this temporally and spatially variable hemodynamic response is a highly sensitive and consistent marker of neuronal activity that will continue to provide new information as our tools become more sophisticated.

**Biography:** **Dr. Bandettini** received his B.S. from Marquette University in 1989 and his Ph.D. from the Medical College of Wisconsin in 1994, where he played a role in the early development of magnetic resonance imaging of human brain function using blood oxygenation contrast. During his postdoctoral fellowship at the Massachusetts General Hospital with Bruce Rosen, he continued his investigation of methods to increase the interpretability, resolution, and applicability of functional MRI techniques.

**Image Perception, Observer Performance, and Technology Assessment**

Conference 8673  
Sunday, 8:00 am

**Optimizing visual search: How does the brain do it?**  
[8673-1]



**Miguel Eckstein**  
Univ. of California, Santa Barbara (USA)

Even with the great advances in computer vision, it is fair to say that for most tasks, humans are still unsurpassed by computers in their ability to visually search. Yet, human searches are not error free. What limits human search performance? And what are the strategies and mechanisms the brain uses to achieve efficient search and minimize errors? I will review the visuo-cognitive limitations degrading search performance and findings spanning the fields of visual psychophysics, computational vision, neuroscience and medical image perception identifying strategies fundamental to successful visual search. The strategies include utilization of knowledge about the targets, distracters, background statistical properties, location probabilities, contextual cues, scene context, rewards, target prevalence and eye movement plans. I will discuss studies using monkey cell electrophysiology, human functional magnetic resonance imaging (fMRI) and electroencephalography (EEG) which have led to progress in our understanding of the underlying brain areas involved in these strategies. The hope is that a better understanding of the computational and neural basis of human visual search might lead to improvements of human performance in life-critical search tasks and advances in our comprehension of what differentiates an expert proficient searcher from a poorly performing searcher.

Biography: **Miguel Eckstein** earned a BS in Physics and Psychology at UC Berkeley and a PhD in Cognitive Psychology at UCLA. He then worked at the Department of Medical Physics and Imaging, Cedars Sinai Medical Center and NASA Ames Research Center before moving to UC Santa Barbara.

**Advanced PACS-based Imaging Informatics and Therapeutic Applications**

Conference 8674  
Thursday, 10:10 am

**The digital operating room: towards intelligent infrastructures and processes** [8674-27]



**Heinz U. Lemke**  
Computer Assisted Radiology and Surgery (Germany)

Based on current research and development activities, a timeline with five stages of maturity levels for the development of the Digital Operating Room (DOR) during the first quarter of the twenty-first century will be outlined.

In particular, there are several areas of technology development for the DOR such as

- 1) **Devices**, including signal detection and recording, robotics, navigation systems and simulation technologies, which allow more precision in the delivery of personalized interventional therapy
- 2) **IT Infrastructure and Standards**, including DICOM, IHE, EMR, and Therapy Imaging and Model Management System (TIMMS) infrastructure for the storage, integration, processing and transmission of patient specific data in and outside the operating room
- 3) **Functionalities**, including patient specific modeling for selected interventional processes, optimization of surgical workflow as well as TIMMS engines and repositories for improving the overall quality of surgical interventions.

Patient specific modeling, work flow management and standards are key aspects for the development of DOR technologies. They will be the prerequisite for intelligent infrastructures and processes in the digital operating room of the future.

Biography: **Heinz U. Lemke** is Strategic Advisor on Research at the Innovation Center Computer Assisted Surgery (IC-CAS), University of Leipzig and is Visiting Fellow in the Institute for Advanced Study of the University of Munich. During the last 25 years he was also Visiting Professor at universities in USA, Japan, China, Egypt and Switzerland.

**Ultrasonic Imaging, Tomography, and Therapy**

Conference 8675

Wednesday, 8:00 am

**Ultrasound strain imaging for quantification of tissue function: cardiovascular and muscle applications** [8675-1]



**Chris L. de Korte**  
Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

With ultrasound Imaging the deformation of tissue can be measured. When a force is applied on the tissue, the tissue is deformed. Quantification of tissue deformation can be used to assess the mechanical properties of tissue (elastography). If the tissue under interrogation is actively deforming, the deformation is directly related to the function of the structure (strain imaging). The first approach can be used for atherosclerotic plaques characterization while with the latter application the contractility of the heart or skeletal muscles can be assessed.

We developed radio frequency (rf) based ultrasound methods to assess the deformation at higher resolution and with higher accuracy than commercial methods using conventional image data (Tissue Doppler Imaging and 2D speckle tracking methods). However, this method is limited to measuring strain only along the ultrasound beam direction, so 1D. We further extended this method to multiple directions by using compounding of data acquired at multiple beam steered angles.

Biography: **Chris L. de Korte** is Associate Professor Medical Ultrasound Techniques. Since 2012, he is chair of the Medical UltraSound Imaging Centre at the Radboud University Nijmegen Medical Centre. for Medical Ultrasound, and is member of the Technical Program Committee of the International IEEE Ultrasonics Symposium.

Wednesday, 3:30 pm

**New developments in vector velocity imaging using the transverse oscillation approach** [8675-14]



**Jørgen Arendt Jensen**  
Technical Univ. of Denmark (Denmark)

Vector velocity imaging using the Transverse Oscillation (TO) approach has recently been FDA approved for linear array transducers on a commercial platform. It can now be used clinically for studying the complex flow at e.g. bifurcations, valves, and the heart in real time. Several clinical examples from the carotid artery to the heart will be shown. The technique is also being further developed and adapted for convex and phased array probes, for spectral velocity estimation, pressure estimation, and for three dimensional tensor velocity estimation. It is shown how the methods are optimized using Field II simulations along with several examples of their performance.

Biography: **Jørgen Arendt Jensen** is professor of Biomedical Signal Processing at the Technical University of Denmark and head of Center for Fast Ultrasound Imaging since 1998. His research is centered on simulation of ultrasound imaging using Field II, synthetic aperture imaging, vector velocity estimation, and construction of ultrasound research systems.

**Digital Pathology**

Conference 8676  
Sunday, 1:20 pm

**Dawn of the digital diagnosis assistance system, can it open a new age for pathology?** [8676-1]



**Akira Saito**  
NEC Corp. (USA)

For the past decade, digital image acquisition devices and especially whole slide imaging scanners have greatly improved in resolution, image quality as well as speed of acquisition. Today, a handful of manufacturers compete for the sale of such devices to hospitals, institutes and pathology laboratories in the United States, Europe and Asia. Although many pathology departments have purchased and installed such equipment, its usage remains mostly confined to archival and educational purposes. To gain wider acceptance for use in diagnosis assistance and tele-pathology, today's systems still need to overcome technical challenges and undergo standardization.

At first, we will give an overview of such environment of digital pathology, and then "e-Pathologist", NEC's digital pathology diagnosis assistance system and discuss the problems we faced during its development and installation at a large Japanese commercial pathology lab.

In a second part, we will describe current efforts in quantitative pathology for liver cancer, a Japanese government-funded project in collaboration with Japanese Universities. Through both these experiences, we have furthered our understanding on how to reconcile the pathologist's thinking with a computer system while trying to provide effective diagnosis assistance.

Biography: **Dr. Akira Saito, Ph.D.**, is the Senior Manager and Senior Principal Researcher at the Medical Solutions Division, BioMedical Imaging and Informatics Group, NEC Corporation.

These technical workshops are included with your registration.

## Sunday Workshops

### Image Perception, Observer Performance, and Technology Assessment

Conference 8673  
Location: Fiesta 1-3  
Time: 5:45 to 7:45 pm

### ROC Analysis: A tribute to Charlie Metz and an assessment of the State of the Art

Workshop Chairs: **Yulei Jiang**, Univ. of Chicago Medical Ctr. (USA); **Craig K. Abbey**, Univ. of California, Santa Barbara (USA); **Claudia Mello-Thoms**, Univ. of Pittsburgh (USA)

Panelists:  
**Yulei Jiang**, Univ. of Chicago Medical Ctr. (USA)  
**Kyle Myers**, U.S. Food and Drug Administration (USA)  
**Stephen Hillis**, Iowa City VA Medical Ctr. (USA)  
**Brandon Gallas**, U.S. Food and Drug Administration (USA)

Beginning in the 1970s, the late Dr. Charles E. Metz has been a champion of objective evaluation of medical imaging methods through receiver operating characteristic (ROC) analysis, and made seminal contributions to its development. The purpose of this workshop is to celebrate Dr. Metz's life, and to take an assessment of the field that he put so much of his energy into developing.

The workshop will consist of presentations by experts in this field, and will range from Dr. Metz's life and his scientific contributions, to the current state of the art on ROC analysis, to novel methodologies and alternatives that been developed and used in recent years, to what lays ahead in the future for this field. The presentations are intended to set the stage for a lively and collegial discussion involving the audience and the panelists.

**Subjects of interest:** Quantitative, task-specific and objective evaluation of medical imaging, comparison of assessment methodologies, current issues and novel approaches

### NON TECHNICAL WORKSHOP

Location: Fiesta 8-10  
Time: 5:45 to 7:45 pm

### Preparing a Competitive NIH Application

Workshop Chair: **Marie Gill**, National Institute of Biomedical Imaging and Bioengineering (USA)

Speakers: NIH Staff and Principal Investigators

This workshop will focus on the important issues involved in preparing a high-quality grant application. Participants will learn about the important skills and features associated with the art form of grantsmanship needed to write competitive applications for funding from the NIH. The workshop will be led by a staff member from the National Institutes of Health and speakers will include successful grantees speaking on how they approached the problem of preparing the grant application. Presentations will explore the peer review process, and how to structure, write, and fine-tune a competitive application for funding consideration. Included will be a mock review of real grants by scientists to demonstrate the peer review process and what factors are associated with assessing the strengths and weaknesses of applications. Finally, a presentation will address institute announcements and available funding at NIH.

#### TOPICS:

- The NIH grant application review process
- 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
- What to include in a cover letter
- Advice for early career investigators
- Varieties of grant mechanisms (R03, R21, R01, training grants, etc.)

MEET WITH NIH STAFF  
Sunday · 1:30 to 3:30 pm  
Location: Fiesta 4

### Meet with NIH staff to discuss your specific grant proposals.

This session allows investigators to meet with individual NIH staff members one-on-one to discuss specific questions about NIH grant applications and the grant review process. Participants interested in briefly discussing their grant proposals with an NIH staff member should come prepared with a short list of Specific Aims.

In addition, investigators can ask questions about:

- 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 the NIH review system
- Academics

## Tuesday Workshops · 5:00 to 7:00 pm

### Physics of Medical Imaging

Conference 8668  
Location: Fiesta 5

### Phase Contrast X-ray Imaging

Workshop Chair: **Norbert Pelc**, Stanford Univ. (USA)

Phase contrast x-ray imaging extracts information not only from the absorption of the primary beam but also from the stronger phase change effects. This workshop will include presentations by experts in phase contrast x-ray imaging describing the basic aspects, potential applications, strengths and weaknesses of the method followed by a panel discussion.

#### Speakers:

- **Basic principles of phase contrast x-ray imaging**  
**Guang-Hong Chen**, Univ. of Wisconsin (USA)
- **In-line phase contrast imaging with a small-spot liquid-metal-jet source**  
**Norbert Pelc**, Stanford Univ. (USA) (in lieu of Hans Hertz, KTH (Sweden))
- **Prospects for small sample imaging**  
**Thilo Michel**, Friedrich-Alexander Univ. (Germany)
- **Prospects for diagnostic human imaging**  
**Thomas Flohr**, Siemens Medical Solutions (Germany)

### Image Processing

Conference 8669  
Location: Fiesta 6

### PANEL DISCUSSION When Computer Vision Meets Medical Imaging

In the last few years, a diverse set of computer vision techniques has been successfully applied to medical image computing problems. In this workshop, we will explore a few known computer visions algorithms which have had an impact on medical image analysis and will discuss potential techniques which might be applicable to our field in the coming years.

Tuesday Workshops · 5:00 to 7:00 pm

## Computer-Aided Diagnosis

Conference 8670  
Location: Veracruz C

## Live Demonstrations

The goal of this workshop is to provide a forum for systems and algorithms developers to show off their creations. The intent is for the audience to be inspired to conduct derivative research, for the demonstrators to receive feedback and find new collaborators, and for all to learn about the rapidly evolving field of medical imaging.

The Live Demonstration Workshop encourages participation from all of the conferences that comprise the SPIE Medical Imaging Conference.

Authors and attendees from the PACS, Perception, Physics, Image Guided Procedures, and all other conferences are invited to attend and to submit demonstrations.

This workshop will feature interactive demonstrations that are complementary to the oral and poster presentations of SPIE Medical Imaging. During this event, authors of SPIE Medical Imaging papers will be hosting samples, systems, and software demonstrations that depict the implementation, operation, and utility of their research. The workshop will start with a short overview of the participating teams and systems. Next, the audience can interact with the teams during live demonstrations of the systems.

We are encouraging the use of public data in the demonstrations.

Researchers are also encouraged to make their own data publicly available. Participation in this public data component of the workshop is purely voluntary.

## Image-Guided Procedures, Robotic Interventions, and Modeling

Conference 8671  
Location: Fiesta 1-3

## The Image-Guided Surgery Toolkit (IGSTK) a Resource for Researchers, Entrepreneurs, and Educators

Workshop Chair: **Ziv R. Yaniv**, Children's National Medical Center (USA)

Developing image-guidance systems both in research and commercial settings depends upon an infrastructure whose implementation requires considerable investment. Teaching the key technologies used by image-guidance systems, in a hands-on manner, also requires such an infrastructure, in addition to placing tight constraints on cost. The Image-Guided Surgery Toolkit aims to address these issues by providing an open source infrastructure for research, education and commercial applications in image-guided interventions. In this workshop we will give an overview of the toolkit, its current state and future development plans. We will present several applications that build upon the toolkit both in the research and commercial domains. Finally, we will present a recently developed educational component, allowing students to actively engage in each of the steps of an image guided intervention, starting with pre-operative calibration and planning to performing intra-operative navigation. The workshop will conclude with a hands-on demo of this 'zero' cost system.

## Advanced PACS-based Imaging Informatics and Therapeutic Applications

Conference 8674  
Location: Monterey 1-3

## 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.



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Photo courtesy of Ken Hanson

## 2013 Poster Awards Information

### Poster Awards in Conference Rooms

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. See 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.

## Poster Session Information

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

Location: Veracruz C

Poster presentations from the Image Processing; Biomedical Applications in Molecular, Structural, and Functional Imaging; Image Perception, Observer Performance, and Technology Assessment; and Digital Pathology conferences will be included.

**Author Set-Up Time:** Sunday starts at Noon

Posters should remain on display until the end of the Interactive Poster Session on Monday.

**Interactive Poster Session and Reception:**

Monday from 5:00 to 6:30 pm

### TUESDAY/WEDNESDAY POSTER SESSION

Location: Veracruz C

Poster presentations from the Physics of Medical Imaging; Computer-Aided Diagnosis; Image-guided Procedures, Robotic Interventions, and Modeling; Advanced PACS-based Imaging Informatics, and Therapeutic Applications; and Ultrasonic Imaging, Tomography, and Therapy conferences will be included.

**Author Set-Up Time:** Tuesday starts at 9:40 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

**NOTE:** Extended poster viewing until 9:00 pm on all poster session days.

See Poster Presentation Guidelines online and page 69 for additional information. Poster award winners will be recognized and certificates distributed in the conference meeting rooms. Check conference schedules for times and locations. Ribbons will identify winning posters during the Interactive Poster Sessions.



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approval, SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

Earn MPCECs (Medical Physics Continuing Education Credits) for courses at Medical Imaging 2012. 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.

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

## Get Smart with Courses at Medical Imaging

Education you need to stay competitive in today's job market.

### ImageJ Part 1: The GUI and Macro Programming with Applications to Image Processing and Image Analysis **NEW** SC1094

**Course Level: Introductory · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Saturday 8:30 am to 12:30 pm**

Instructor: **Richard VanMetter**

Scientists, engineers, technicians, and managers who wish to learn more about using ImageJ for image viewing, processing and analysis. Undergraduate level training in imaging science or equivalent practical experience is assumed. Some familiarity with programming concepts will be helpful for the macro-programming course component.

### ImageJ Part 2: Plugin Programming with Applications to Image Processing and Image Analysis **NEW** SC1095

**Course Level: Intermediate · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Saturday 1:30 pm to 5:30 pm**

Instructor: **Richard VanMetter**

This course is an introduction to Java object-oriented programming with application to ImageJ plugin programming. The course will focus on designing, programming and installing plugins for image processing and analysis applications. Real-time demonstrations will illustrate key concepts through examples from several medical-imaging modalities. Anyone seeking to extend their use of ImageJ beyond the user interface, available macros and macro-programming will benefit from this course. (Note: Course is based on the ImageJ 1.46 API)

### Diffusion Imaging SC1063

**Course Level: Introductory · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Saturday 8:30 am to 12:30 pm**

Instructors: **Jan Klein and Klaus Fritzsche**

This half-day course will provide attendees an overview on diffusion imaging techniques and related post-processing algorithms. Basic concepts of the diffusion-weighted MRI acquisition are given, followed by a comparison of different spherical diffusion functions which are used to represent the fiber direction of the underlying tissue. Fiber tracking, one of the most popular applications of diffusion imaging, will be explained with a focus on its reliability to reconstruct crossing, kissing, merging and fanning axonal fibers. Further parts of this course will explain quantitative approaches and advanced visualization techniques like fiber clustering, glyph rendering and illustrative visualization.

*This course is intended as a companion to SC1065, Exploring Brain Connectivity in-vivo: from Theory to Practice. Attendees will benefit maximally by attending both courses.*

### Exploring Brain Connectivity in-vivo: from Theory to Practice SC1065

**Course Level: Introductory · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Saturday 1:30 pm to 5:30 pm**

Instructors: **Sonia Pujol, Martin Styner, and Guido Gerig**

The development of Diffusion Tensor Magnetic Resonance Imaging (DT-MRI) has opened up the possibility of studying the complex organization of the brain's white matter in-vivo. This course will guide participants through the fundamental aspects of DT-MRI data analysis, as well as the challenges of transferring cutting-edge DT-MRI techniques to clinical routine. The format will include a series of hands-on sessions with the participants running DT-MRI analysis on their own laptops, to provide a practical experience of extracting useful clinical information from Diffusion MR images.

This event is part of the on-going effort of the NIH-funded National Alliance for Medical Image Computing (NA-MIC) to transfer the latest advances in biomedical image analysis to the scientific and clinical community.

*This course is intended as a companion to SC1063, Diffusion Imaging. Attendees will benefit maximally by attending both courses.*



## Graph Algorithmic Techniques for Biomedical Image Segmentation SC1026

**Course Level: Intermediate · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Wednesday 8:30 am to 12:30 pm**

Instructors: **Mona (Haeker) Garvin** and **Xiaodong Wu**

This course provides an in-depth overview of two state-of-the-art graph-based methods for segmenting three-dimensional structures in medical images: graph cuts and the LOGISMOS (Layered Optimal Graph Image Segmentation of Multiple Objects and Surfaces) approach. Such graph-based approaches are becoming increasingly used in the medical image analysis community, in part, due to their ability to efficiently produce globally optimal three-dimensional segmentations in a single pass (not requiring an iterative numerical scheme).

## Fundamentals of Medical Image Processing and Analysis SC086

Available in  
**ONLINE**  
 format

**Course Level: Intermediate · CEU: 0.65**  
**\$545 Members / \$635 Non-Members USD**  
**Saturday 8:30 am to 5:30 pm**

Instructor: **Thomas Deserno**

This course gives an overview of medical image formation, enhancement, analysis, visualization, and communication with many examples from medical applications. It starts with a brief introduction to medical imaging modalities and acquisition systems. Basic approaches to display one-, two-, and three-dimensional (3D) biomedical data are introduced. As a focus, image enhancement techniques, segmentation, texture analysis and their application in diagnostic imaging will be discussed. To complete this overview, storage, retrieval, and communication of medical images are also introduced.

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

**Course Level: Advanced · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Sunday 1:30 pm to 5:30 pm**

Instructor: **Ian Cunningham**

Medical x-ray imaging systems must be designed to ensure that maximum image quality is obtained for a specified radiation dose to the patient, and quality assurance programs are used to ensure these standards are maintained. This course is designed for anyone who wants to extend their understanding of how image quality is related to detector design and what that implies: how to talk about it, how to think about it, how to measure it and how to compare it. Performance metrics including the MTF, NPS, NEQ and DQE in digital radiography and mammography will be discussed. A cascaded-systems analysis will be used to help interpret the DQE of some real systems. The DQE of photon-counting systems, and the impact of detector limitations, will be discussed. Both non-mathematical intuitive descriptions and more rigorous mathematical descriptions will be presented.

## Principles and Advancements in X-ray Computed Tomography SC471

Available in  
**ONLINE**  
 format

**Course Level: Introductory · CEU: 0.35**  
**\$425 Members / \$475 Non-Members USD**  
**Saturday 8:30 am to 12:30 pm**

Instructor: **Jiang Hsieh**

This course will present a description of the fundamental physics and mathematical principles of CT. Key system performance parameters and design tradeoffs are reviewed. Causes and corrections of various image artifacts are extensively discussed. Potential impact of image artifacts and performance parameters on other computer-based algorithms, such as CAD and 3D volume rendering, is outlined. The second part of the tutorial will focus on the recent technology advancements in CT. Basic principles, benefits, and inherent issues associated with the helical (spiral) CT, multi-slice CT, and volumetric CT will be described.

COURSE PRICE INCLUDES the text *Computed Tomography: Principles, Design, Artifacts, and Recent Advances, 2nd edition* (SPIE Press, 2009) by Jiang Hsieh.

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

**Course Level: Intermediate · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Saturday 1:30 pm to 5:30 pm**

Instructors: **Klaus Mueller** and **Eric Papenhausen**

Advanced graphics boards have become a standard ingredient in any mid-range and high-end PC, and aside from enabling stunning interactive graphics effects in computer games, their rich programmability allows speedups (over CPU-based code) of 1-2 orders of magnitude also in general-purpose computations. This course explains, in gentle ways, how to exploit this powerful computing platform to accelerate various popular medical imaging applications, such as CT, MRI, image processing, and data visualization.

## Spectral CT Imaging SC987

**Course Level: Intermediate · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Sunday 8:30 am to 12:30 pm**

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

This course provides attendees with an advanced knowledge of spectral CT imaging. The course focuses on the properties of a spectral CT measurement and the main applications in spectral CT reconstruction and spectral CT image postprocessing. Many clinical examples of spectral CT imaging applications are provided to illustrate the diagnostic outcome of this technique.

## Medical Imaging: From Concept to Market WS1024

**Course Level: Introductory · CEU: 0.35**  
**\$335 Members / \$385 Non-Members USD**  
**Sunday 1:30 pm to 5:30 pm**

Instructor: **Mostafa Analoui**

This course provides attendees with key steps involved in commercializing a medical imaging innovation. It offers fundamental concepts in life cycle management of innovative ideas, translation and validation in clinical trials, financing and strategic partnership. It also covers topic related to securing and licensing of intellectual property (IP), formation of business entity, raising capital, regulatory pathways and market analysis. This course includes specific case studies highlighting key traces for success and failure.

## Early Career Professional Development in Medical Imaging WS757

**Course Level: Introductory · CEU: 0.35**  
**\$100 Members / \$150 Non-Members USD**  
**Saturday 1:30 pm to 5:30 pm**

Instructor: **Elizabeth Krupinski**

This course provides attendees with strategies and ideas for navigating through the early years of Medical Imaging research in the academic environment. The course focuses on strategic career planning topics such as effective CV development, understanding the Promotion & Tenure process, resource negotiating tips, time management & organizational skills, and writing and winning research grants.

## Writing for Publication in Medical Imaging WS776

**Course Level: Introductory · CEU: 0.35**  
**\$100 Members / \$150 Non-Members USD**  
**Saturday 8:30 am to 12:30 pm**

Instructor: **Kenneth Hanson**

This course teaches attendees the skills needed to create well-written scientific articles for publication in journals or proceedings. We discuss the structure of a paper and the roles of its various parts. You will learn the principles of good technical writing and how to avoid common pitfalls. We will discuss how to use writer's aids, many of which are available online.

**Registration Required.**  
**See SPIE Cashier to register.**

## Conference 8668

Room: Fiesta 5

Monday–Thursday 11–14 Feb. 2013  
Proceedings of SPIE Vol. 8668

### Physics of Medical Imaging

*Conference Chairs:* **Robert M. Nishikawa**, The Univ. of Chicago (USA); **Bruce R. Whiting**, Univ. of Pittsburgh (USA)

*Conference Co-Chair:* **Christoph Hoeschen**, Helmholtz Zentrum München GmbH (Germany)

*Program Committee:* **Kirsten Boedeker**, Toshiba Medical Research Institute USA (USA); **Hilde Bosmans**, UZ Leuven (Belgium); **Guang-Hong Chen**, Univ. of Wisconsin School of Medicine and Public Health (USA); **Mats E. Danielsson**, Royal Institute of Technology (Sweden); **Maria Drangova**, Robarts Research Institute (Canada); **Thomas G. Flohr**, Siemens Medical Solutions GmbH (Germany); **Stephen J. Glick**, Univ. of Massachusetts Medical School (USA); **Michael Grass**, Philips Technologie GmbH (Germany); **Marc Kachelriess**, German Cancer Research Ctr. (DKFZ) (Germany); **Karim S. Karim**, Univ. of Waterloo (Canada); **Hee-Joung Kim**, Yonsei Univ. (Korea, Republic of); **Despina Kontos**, The Univ. of Pennsylvania Health System (USA); **Iacovos S. Kyprianou**, U.S. Food and Drug Administration (USA); **Joseph Y. Lo**, Duke Univ. (USA); **Norbert J. Pelc**, Stanford Univ. (USA); **Jinyi Qi**, Univ. of California, Davis (USA); **John A. Rowlands**, Thunder Bay Regional Research Institute (Canada); **John M. Sabol**, GE Healthcare (USA); **Taly G. Schmidt**, Marquette Univ. (USA); **Jeffrey H. Siewerdsen**, Johns Hopkins Univ. (USA); **Anders Tingberg**, Scania Univ. Hospital (Sweden); **John Yorkston**, Carestream Health Technology and Innovation Ctr. (USA)

*Posters for this conference will be on display Tuesday and Wednesday in Veracruz C. The interactive poster session will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room. Check conference program for exact time.*

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## Conference 8669

Rooms: Fiesta 6

Sunday–Tuesday 10–12 Feb. 2013  
Proceedings of SPIE Vol. 8669

### Image Processing

*Conference Chairs:* **Sebastien Ourselin**, Univ. College London (UK); **David R. Haynor**, Univ. of Washington (USA)

*Program Committee:* **Mostafa Analoui**, The Livingston Group, LLC (USA); **Elsa D. Angelini**, Telecom ParisTech (France); **Kyongtae Ty Bae**, Univ. of Pittsburgh Medical Ctr. (USA); **Christian Barillot**, IRISA / INRIA Rennes (France); **Benoit M. Dawant**, Vanderbilt Univ. (USA); **Baowei Fei**, Emory Univ. (USA); **Aaron Fenster**, Robarts Research Institute (Canada); **Bernd Fischer**, Univ. Luebeck (Germany); **Alejandro F. Frangi**, Univ. Pompeu Fabra (Spain); **Mona K. Garvin**, The Univ. of Iowa (USA); **James C. Gee**, Univ. of Pennsylvania (USA); **Guido Gerig**, The Univ. of Utah (USA); **Tobias Heimann**, Siemens AG (Germany); **Bennett A. Landman**, Vanderbilt Univ. (USA); **Tianhu Lei**, Univ. of Pittsburgh Medical Ctr. (USA); **Boudewijn P. F. Lelieveldt**, Leids Univ. Medisch Ctr. (Netherlands); **Murray Loew**, The George Washington Univ. (USA); **Cristian Lorenz**, Philips Medizin Systeme GmbH (Germany); **Frederik Maes**, Katholieke Univ. Leuven (Belgium); **Vincent A. Magnotta**, The Univ. of Iowa Hospitals and Clinics (USA); **Sunanda D. Mitra**, Texas Tech Univ. (USA); **Kensaku Mori**, Nagoya Univ. (Japan); **Nassir Navab**, Technische Univ. München (Germany); **Mads Nielsen**, Univ. of Copenhagen (Denmark); **Wiro J. Niessen**, Erasmus MC (Netherlands); **Brian S. Nutter**, Texas Tech Univ. (USA); **Josien P. Pluim**, Univ. Medical Ctr. Utrecht (Netherlands); **Jerry L. Prince**, Johns Hopkins Univ. (USA); **Sonia Pujol**, Brigham and Women's Hospital (USA), Harvard Medical School (United States); **Daniel Rueckert**, Imperial College London (UK); **Punam K. Saha**, The Univ. of Iowa (USA); **Olivier Salvado**, Commonwealth Scientific and Industrial Research Organisation (Australia); **Julia A. Schnabel**, Univ. of Oxford (UK); **Colin Studholme**, Univ. of Washington (USA); **Martin A. Styner**, The Univ. of North Carolina at Chapel Hill (USA); **Philippe Thévenaz**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Jayaram K. Udupa**, The Univ. of Pennsylvania Health System (USA); **Tomaž Vrtovec**, Univ. of Ljubljana (Slovenia); **Andreas Wahle**, The Univ. of Iowa (USA)

*Posters for this conference will be on display Sunday and Monday in Veracruz C. The interactive poster session will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room. Check conference program for exact time.*

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## Conference 8670

Room: Fiesta 8-10

Tuesday–Thursday 12–14 Feb. 2013  
Proceedings of SPIE Vol. 8670

### Computer-Aided Diagnosis

*Conference Chairs:* **Carol L. Novak**, Siemens Corporate Research & Technology (USA); **Stephen Aylward**, Kitware, Inc. (USA)

*Program Committee:* **Samuel G. Armato III**, The Univ. of Chicago Medical Ctr. (USA); **Susan M. Astley**, The Univ. of Manchester (UK); **Kyongtae Ty Bae**, Univ. of Pittsburgh Medical Ctr. (USA); **Matthew S. Brown**, Univ. of California, Los Angeles (USA); **Heang-Ping Chan**, Univ. of Michigan Health System (USA); **Marleen de Bruijne**, Erasmus MC (Netherlands); **Thomas M. Deserno**, RWTH Aachen (Germany); **Catalin Fetita**, TELECOM & Management SudParis (France); **Hiroshi Fujita**, Gifu Univ. School of Medicine (Japan); **Maryellen L. Giger**, The Univ. of Chicago Medical Ctr. (USA); **Hayit Greenspan**, Tel Aviv Univ. (Israel); **Lubomir M. Hadjiiski**, Univ. of Michigan Health System (USA); **Horst K. Hahn**, Fraunhofer MEVIS (Germany); **Jong Hyo Kim**, Seoul National Univ. College of Medicine (Korea, Republic of); **Joseph Y. Lo**, Duke Univ. (USA); **Marius G. Linguraru**, Children's National Medical Ctr. (USA); **Michael F. McNitt-Gray**, Univ. of California, Los Angeles (USA); **Kensaku Mori**, Nagoya Univ. (Japan); **Janne J. Näppi**, Massachusetts General Hospital (USA); **Meindert Niemeijer**, The Univ. of Iowa Hospitals and Clinics (USA); **Noboru Niki**, Univ. of Tokushima (Japan); **Nicholas A. Petrick**, U.S. Food and Drug Administration (USA); **Ronald M. Summers**, National Institutes of Health (USA); **Kenji Suzuki**, The Univ. of Chicago (USA); **Georgia Tourassi**, Oak Ridge National Lab. (USA); **Bram van Ginneken**, Radboud Univ. Nijmegen (Netherlands); **Eva M. van Rikxoort**, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); **Rafael Wiemker**, Philips Research (Germany); **Axel Wismueller**, Univ. of Rochester Medical Ctr. (USA); **Xiaofeng Yang**, Emory Univ. (USA)

*Posters for this conference will be on display Tuesday and Wednesday in Veracruz C. The interactive poster session will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room. Check conference program for exact time.*

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## Conference 8671

Rooms: Fiesta 1-3

Tuesday–Thursday 12–14 Feb. 2013  
Proceedings of SPIE Vol. 8671

### Image-Guided Procedures, Robotic Interventions, and Modeling

*Conference Chairs:* **David R. Holmes III**, Mayo Clinic (USA); **Ziv R. Yaniv**, Children's National Medical Ctr. (USA)

*Program Committee:* **Purang Abolmaesumi**, The Univ. of British Columbia (Canada); **Wolfgang Birkfellner**, Medizinische Univ. Wien (Austria); **Alexandre X. Falcão**, Univ. Estadual de Campinas (Brazil); **Baowei Fei**, Emory Univ. (USA); **Gabor Fichtinger**, Queen's Univ. (Canada); **George J. Grevera**, Saint Joseph's Univ. (USA); **Steven L. Hartmann**, Medtronic Navigation (USA); **David R. Haynor**, Univ. of Washington (USA); **William E. Higgins**, The Pennsylvania State Univ. (USA); **Pierre Jannin**, Univ. de Rennes 1 (France); **David M. Kwartowitz**, Clemson Univ. (USA); **Lena Maier-Hein**, Deutsches Krebsforschungszentrum (Germany); **Michael Miga**, Vanderbilt Univ. (USA); **Kensaku Mori**, Nagoya Univ. (Japan); **Terry Peters**, Robarts Research Institute (Canada); **Maryam E. Rettmann**, Mayo Clinic (USA); **Frank Sauer**, Siemens Corporate Research (USA); **Guy Shechter**, Philips Medical Systems (USA); **Eric J. Seibel**, Univ. of Washington (USA); **Robert J. Webster III**, Vanderbilt Univ. (USA); **Jay B. West**, Accuray, Inc. (USA); **Ivo Wolf**, Mannheim Univ. of Applied Sciences (Germany); **Kenneth H. Wong**, Virginia Polytechnic Institute and State Univ. (USA)

*Posters for this conference will be on display Tuesday and Wednesday in Veracruz C. The interactive poster session will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be announced in the conference meeting room. Check conference program for exact time.*

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## Conference 8672

Room: Monterey 1-3

Sunday–Wednesday 10–13 Feb. 2013  
Proceedings of SPIE Vol. 8672

### Biomedical Applications in Molecular, Structural, and Functional Imaging

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

*Program Committee:* **Amir A. Amini**, Univ. of Louisville (USA); **Thorsten M. Buzug**, Univ. zu Lübeck (Germany); **Juan R. Cebral**, George Mason Univ. (USA); **Yu Chen**, Univ. of Maryland, College Park (USA); **Anne Clough**, Marquette Univ. (USA); **Barjor Gimi**, Geisel School of Medicine at Dartmouth (USA); **Andreas H. Hielscher**, Columbia Univ. (USA); **Xiaoping P. Hu**, Emory Univ. (USA); **Xavier Intes**, Rensselaer Polytechnic Institute (USA); **Andrzej Krol**, SUNY Upstate Medical Univ. (USA); **John F. LaDisa**, Marquette Univ. (USA); **Armando Manduca**, Mayo Clinic College of Medicine (USA); **Erik Leo Ritman**, Mayo Clinic (USA); **Merryn H. Tawhai**, The Univ. of Auckland (New Zealand); **Nicholas J. Tustison**, Univ. of Virginia (USA); **Axel Wismueller**, Univ. of Rochester Medical Ctr. (USA)

*Posters for this conference will be on display Sunday and Monday in Veracruz C. The interactive poster session will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room. Check conference program for exact time.*

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# Technical Conferences



**Conference 8673**  
 Room: Fiesta 1-3  
 Sunday–Monday 10–11 Feb. 2013  
 Proceedings of SPIE Vol. 8673

**Conference 8674**  
 Room: Monterey 1-3  
 Tuesday–Thursday 12–14 Feb. 2013  
 Proceedings of SPIE Vol. 8674

**Conference 8675**  
 Rooms: Fiesta 6  
 Tuesday–Thursday 12–14 Feb. 2013  
 Proceedings of SPIE Vol. 8675

**Conference 8676**  
 Room: Fiesta 8-10  
 Sunday–Monday 10–11 Feb. 2013  
 Proceedings of SPIE Vol. 8676

**Image Perception, Observer Performance, and Technology Assessment**

*Conference Chairs:* **Craig K. Abbey**, Univ. of California, Santa Barbara (USA); **Claudia R. Mello-Thoms**, Univ. of Pittsburgh (USA)

*Program Committee:* **François O. Bochud**, Ctr. Hospitalier Univ. Vaudois (Switzerland); **Jovan G. Brankov**, Illinois Institute of Technology (USA); **Darrin C. Edwards**, The Univ. of Chicago (USA); **Alastair G. Gale**, Loughborough Univ. (UK); **Howard C. Gifford**, Univ. of Massachusetts Medical School (USA); **Stephen L. Hillis**, Iowa City VA Medical Ctr. (USA); **Elizabeth A. Krupinski**, The Univ. of Arizona (USA); **Matthew A. Kupinski**, The Univ. of Arizona (USA); **Maciej A. Mazurowski**, Duke Univ. (USA); **Anthony J. Maeder**, Univ. of Western Sydney (Australia); **Mark F. McEntee**, The Univ. of Sydney (Australia); **Berkman Sahiner**, U.S. Food and Drug Administration (USA); **David L. Wilson**, Case Western Reserve Univ. (USA); **Federica Zanca**, UZ Leuven (Belgium)

**Advanced PACS-based Imaging Informatics and Therapeutic Applications**

*Conference Chairs:* **Maria Y. Law**, Hong Kong Sanatorium and Hospital (Hong Kong, China); **William W. Boonn**, Univ. of Pennsylvania Health System (USA)

*Program Committee:* **James Chen**, Univ. of California, San Diego (USA); **Janice C. Honeyman-Buck**, Univ. of Florida (USA); **Steven C. Horii**, Univ. of Pennsylvania Health System (USA); **Brent J. Liu**, The Univ. of Southern California (USA); **Heinz U. Lemke**, Computer Assisted Radiology and Surgery (Germany); **Khan M. Siddiqui**, Higi LLC (USA); **Eliot L. Siegel**, Univ. of Maryland Medical Ctr. (USA); **John B. Strauss**, Microsoft Corp. (USA); **Wyatt Tellis**, Univ. of California, San Francisco (USA); **Jianguo Zhang**, Shanghai Institute of Technical Physics (China); **Stefan L. Zimmerman**, Johns Hopkins Univ. (USA)

**Ultrasonic Imaging, Tomography, and Therapy**

*Conference Chairs:* **Johan G. Bosch**, Erasmus Univ. Rotterdam (Netherlands); **Marvin M. Doyley**, Univ. of Rochester (USA)

*Program Committee:* **Jeffrey C. Bamber**, The Royal Marsden NHS Foundation Trust (UK); **Jan D'Hooge**, Katholieke Univ. Leuven (Belgium); **Neb Duric**, Karmanos Cancer Institute (USA), Delphinus Medical Technologies (United States); **Stanislav Y. Emelianov**, The Univ. of Texas at Austin (USA); **James F. Greenleaf**, Mayo Clinic (USA); **Michael F. Insana**, Univ. of Illinois at Urbana-Champaign (USA); **Jørgen Arendt Jensen**, Technical Univ. of Denmark (Denmark); **Roman Maev**, Univ. of Windsor (Canada); **Stephen A. McAleavey**, Univ. of Rochester (USA); **Nicole V. Ruiter**, Karlsruher Institut für Technologie (Germany); **K. Kirk Shung**, The Univ. of Southern California (USA); **Kai E. Thomenius**, General Electric Co. (USA); **William F. Walker**, Univ. of Virginia (USA)

**Digital Pathology**

*Conference Chairs:* **Metin N. Gurcan**, The Ohio State Univ. Medical Ctr. (USA); **Anant Madabhushi**, Case Western Reserve Univ. (USA)

*Program Committee:* **M. Murat Dunder**, Indiana Univ.-Purdue Univ. Indianapolis (USA); **Andinet Enquobahrie**, Kitware, Inc. (USA); **Michael D. Feldman**, The Univ. of Pennsylvania Health System (USA); **David J. Foran**, Univ. of Medicine & Dentistry of New Jersey (USA); **Brandon D. Gallas**, U.S. Food and Drug Administration (USA); **Marios A. Gavrielides**, U.S. Food and Drug Administration (USA); **Leo Grady**, Siemens Corporate Research (USA); **Stephen M. Hewitt**, National Cancer Institute/NIH (USA); **Elizabeth A. Krupinski**, The Univ. of Arizona (USA); **Richard M. Levenson**, Univ. of California, Davis Medical Ctr. (USA); **Olivier Lezoray**, Univ. de Caen Basse-Normandie (France); **Anne L. Martel**, Univ. of Toronto (Canada); **James P. Monaco**, VuCOMP, Inc. (USA); **Tim Wilhelm Nattkemper**, Univ. Bielefeld (Germany); **Daniel Racoceanu**, Univ. Pierre and Marie Curie (France); **Nasir M. Rajpoot**, Qatar Univ. (Qatar), The Univ. of Warwick (United Kingdom); **Badrinath Roysam**, Univ. of Houston (USA); **Berkman Sahiner**, U.S. Food and Drug Administration (USA); **Olcay Sertel**, Ventana Medical Systems, Inc. (USA); **John E. Tomaszewski**, SUNY at the Univ. at Buffalo (USA); **Martin J Yaffe**, Sunnybrook Research Institute (Canada); **Bulent Yener**, New Jersey Institute of Technology (USA); **Eric Cosatto**, NEC Labs. America, Inc. (USA)

**WORKSHOP DICOM**  
 Monterey 1-3 · Tues. 5:00 to 7:00 pm  
*Workshop Chair:* **Steven C. Horii**, The Univ. of Pennsylvania Health System (USA)  
 See *Special Events* for additional information.

**WORKSHOP DICOM**  
 Monterey 1-3 · Tues. 5:00 to 7:00 pm  
*Workshop Chair:* **Steven C. Horii**, The Univ. of Pennsylvania Health System (USA)  
 See *Special Events* for additional information.

**WORKSHOP DICOM**  
 Monterey 1-3 · Tues. 5:00 to 7:00 pm  
*Workshop Chair:* **Steven C. Horii**, The Univ. of Pennsylvania Health System (USA)  
 See *Special Events* for additional information.

**WORKSHOP DICOM**  
 Monterey 1-3 · Tues. 5:00 to 7:00 pm  
*Workshop Chair:* **Steven C. Horii**, The Univ. of Pennsylvania Health System (USA)  
 See *Special Events* for additional information.

Posters for this conference will be on display Sunday and Monday in Veracruz C. The interactive poster session will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room. Check conference program for exact time.

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Conference 8669 continued  
Image Processing

Rooms: Fiesta 6

SESSION 1

Room: Fiesta 6 ..... Sun 8:00 am to 9:40 am

Segmentation

Session Chair: **Punam K. Saha**, The Univ. of Iowa (USA)

8:00 am: **Efficient convex optimization-based curvature dependent contour evolution approach for medical image segmentation**, Eranga Ukwatta, Jing Yuan, Wu Qiu, Martin Rajchl, Aaron Fenster, Robarts Research Institute (Canada) ..... [8669-1]

8:20 am: **An automated algorithm for cell-level FISH dot counting**, Yousef Al-Kofahi, GE Global Research (USA) and GE Global Research (USA); Dirk R. Padfield, Antti Seppo, GE Global Research (USA) . . . [8669-2]

8:40 am: **Automatic cell segmentation in fluorescence images of confluent cell monolayers using multi-object geometric deformable model**, Zhen Yang, John A. Bogovic, Aaron Carass, Mao Ye, Peter C. Searson, Jerry L. Prince, Johns Hopkins Univ. (USA) . . . . . [8669-3]

9:00 am: **Robust local appearance features for MRI brain structure segmentation across scanning protocols**, Hakim C. Achterberg, Dirk H. J. Poot, Fedde van der Lijn, Meike W. Vernooij, M Arfan Ikram, Erasmus MC (Netherlands); Wiro J. Niessen, Erasmus MC (Netherlands) and Delft Univ. of Technology (Netherlands); Marleen de Bruijne, Erasmus MC (Netherlands) and Univ. of Copenhagen (Denmark) . . . . . [8669-4]

9:20 am: **Region-based graph cut using hierarchical structure with application to ground-glass opacity pulmonary nodules segmentation**, Chi-Hsuan Tsou, Kuo-Lung Lor, Institute of Biomedical Engineering, National Taiwan Univ. (Taiwan); Yeun-Chung Chang, National Taiwan Univ. Hospital (Taiwan); Chung-Ming Chen, Institute of Biomedical Engineering, National Taiwan Univ. (Taiwan) . . . . . [8669-150]

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

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Conference 8672 continued  
Biomedical Applications in  
Molecular, Structural, and Functional Imaging

Room: Monterey 1-3

SESSION 1

Room: Monterey 1-3 ..... Sun 8:00 am to 9:40 am

Novel Sensing and Imaging Methods

Session Chairs: **Erik Leo Ritman**, Mayo Clinic (USA);  
**Amir A. Amini**, Univ. of Louisville (USA)

8:00 am: **A multimodal (MRI/Ultrasound) cardiac phantom for imaging experiments**, Vahid Tavakoli, Michael Kendrick, Mostafa Shakeri, Univ. of Louisville (USA); Motaz Alshaher, Marcus F. Stoddard, Univ. of Louisville Hospital (USA); Amir A. Amini, Univ. of Louisville (USA) and Univ. of Louisville (USA) . . . . . [8672-77]

8:20 am: **Peripheral quantitative CT (pQCT) using a dedicated extremity cone-beam CT scanner**, Abdullah Muhiit, Yifu Ding, Sugandha Arora, Mizuha Ogawa, Wojciech Zbijewski, Joseph W. Stayman, Johns Hopkins Univ. (USA); Gaurav Thawait, Johns Hopkins Univ. (USA) and Johns Hopkins Medical Institutions (USA); Nathan Packard, Robert A. Senn, Dong Yang, John Yorkston, Carestream Health, Inc. (USA); Clifton Bingham, Johns Hopkins Medical Institutions (USA); Kenneth Means, MedStar Union Memorial Hospital (USA); John A. Carrino, Johns Hopkins Medical Institutions (USA); Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . . [8672-2]

8:40 am: **Comparative studies of collimator performance in DaTscan (Ioflupane I-123) striatal SPECT**, Andrzej Krol, Mary A. McGrath, Brian T. Carey, David H. Feiglin, SUNY Upstate Medical Univ. (USA) . . . . . [8672-3]

9:00 am: **Fibrosis detection in renal artery stenosis mice model using magnetization transfer MRI**, Behzad Ebrahimi, Bruce E. Knudsen, Slobodan I. Macura, Joseph P. Grande, Lilach O. Lerman, Mayo Clinic (USA) . . . . . [8672-4]

9:20 am: **Quantification of microfluidic dye mixing using front line tracking in curvature scale space**, Stephan Jonas, RWTH Aachen (Germany) and Yale Univ. (USA); Elaine Zhou, Brendan Huang, Michael A. Choma, Yale Univ. (USA); Thomas M. Deserno, RWTH Aachen (Germany). [8672-5]

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

8672 continues on page 19 ➡

Conference 8673 continued  
Image Perception, Observer Performance,  
and Technology Assessment

Room: Fiesta 1-3

SESSION 1

Room: Fiesta 1-3 ..... Sun 8:00 am to 9:40 am

Keynote and Visual Search

Session Chairs: **Craig K. Abbey**, Univ. of California, Santa Barbara (USA);  
**Claudia R. Mello-Thoms**, Univ. of Pittsburgh (USA)

8:00 am: **Optimizing visual search: How does the brain do it?** (*Keynote Presentation*), Miguel Eckstein, Univ. of California, Santa Barbara (USA) . . . . . [8673-1]

9:00 am: **Investigating the association of eye gaze pattern and diagnostic error in mammography**, Frank M. Pinto Jr., Virginia State Univ. (USA); Sophie Voisin, Oak Ridge National Lab. (USA); Garnetta Morin-Ducote, Kathy Hudson, Univ. of Tennessee Medical Ctr. (USA); Songhua Xu, Georgia Tourassi, Oak Ridge National Lab. (USA) . . . . . [8673-2]

9:20 am: **High throughput screening for mammography using a human-computer interface with rapid serial visual presentation (RSVP)**, Chris I. Hope, Annette Sterr, Premkumar Elangovan, Nicholas Geades, David Windridge, Univ. of Surrey (UK); Kenneth C. Young, National Co-ordinating Ctr. for the Physics of Mammography (UK); Kevin Wells, Univ. of Surrey (UK) . . . . . [8673-3]

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

8673 continues on page 19 ➡

Conference 8669 continued

Image Processing

Rooms: Fiesta 6

SESSION 2

Room: Fiesta 6 ..... Sun 10:10 am to 12:10 pm

DTI/Functional

Session Chair: **Sonia Pujol**, Brigham and Women's Hospital (USA)

10:10 am: **Fiber feature map based landmark initialization for highly deformable DTI registration**, Aditya Gupta, The Univ. of North Carolina at Chapel Hill (USA) and Univ. of Pittsburg (USA); Matthew Toews, Harvard Medical School (USA); Ravikiran Janardhana, The Univ. of North Carolina at Chapel Hill (USA); Yogesh Rathi, Harvard Medical School (USA); John Gilmore, The Univ. of North Carolina at Chapel Hill (USA); Maria Escobar, Univ. of Pittsburgh (USA); Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) ..... [8669-6]

10:30 am: **Morphological changes in the corpus callosum: a study with joint Riemannian feature spaces**, Meena Mani, Univ. of Minnesota (USA); Christian Barillot, INRIA (France); Anuj Srivastava, Florida State Univ. (USA) ..... [8669-7]

10:50 am: **Parcellation of the thalamus using diffusion tensor images and a multi-object geometric deformable model**, Chuyang Ye, John A. Bogovic, Sarah H. Ying, Jerry L. Prince, Johns Hopkins Univ. (USA) [8669-8]

11:10 am: **Effects of DTI spatial normalization on white matter tract reconstructions**, Nagesh Adluru, Univ. of Wisconsin-Madison (USA); Hui Zhang, Univ. College London (UK); Do P. M. Tromp, Andrew L. Alexander, Univ. of Wisconsin-Madison (USA) ..... [8669-9]

11:30 am: **Susceptibility artefact correction by combining B0 field maps and non-rigid registration using graph cuts**, Pankaj Daga, Marc Modat, Univ. College London (UK); Gavin Winston, Dept. of Clinical and Experimental Epilepsy (UK); Mark White, Laura Mancini, Andrew McEvoy, John Thornton, Tarek Yousry, Institute of Neurology, Univ. College London (UK); John Duncan, Dept. of Clinical and Experimental Epilepsy (UK); Sebastien Ourselin, Univ. College London (UK) ..... [8669-10]

11:50 am: **Functional brain atlas construction for brain network analysis**, Hongming Li, Yong Fan, Institute of Automation (China) ..... [8669-11]

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

8669 continues on page 20 ➡

Conference 8672 continued

Biomedical Applications in Molecular, Structural, and Functional Imaging

Room: Monterey 1-3

SESSION 2

Room: Monterey 1-3 ..... Sun 10:10 am to 12:10 pm

Cardiovascular

Session Chairs: **Juan R. Cebra**, George Mason Univ. (USA); **John F. LaDisa**, Marquette Univ. (USA); **Amir A. Amini**, Univ. of Louisville (USA)

10:10 am: **Assessments from Intravascular OCT**, David L. Wilson, Zhao Wang, Hong Lu, David Prabhu, Hiram G. Bezerra, Marco A. Costa, Andrew M. Rollins, Case Western Reserve Univ. (USA) ..... [8672-6]

10:30 am: **Porcine pulmonary artery distension during static pressure inflation**, Yik Ching Lee, Alys R. Clark, Auckland Bioengineering Institute (New Zealand); Matthew K. Fuld, Susan Haynes, Abhay A. Divekar, Eric Hoffman, Univ. of Iowa (USA); Merryn H. Tawhai, Auckland Bioengineering Institute (New Zealand) ..... [8672-7]

10:50 am: **MRI-based hemodynamical analysis in patients with surgically treated aortic coarctations**, Michael Delles, Manuela Noe, Yoo-Jin Jeong, Karlsruhe Institute of Technology (Germany); Sebastian Ley, UniversitätsKlinikum Heidelberg (Germany) and Univ. of Toronto (Canada); Hendrik von Tengg-Kobligh, UniversitätsKlinikum Heidelberg (Germany) and German Cancer Research Ctr. (Germany); Hans-Ulrich Kauczor, UniversitätsKlinikum Heidelberg (Germany); Rüdiger Dillmann, Roland Unterhinninghofen, Karlsruhe Institute of Technology (Germany) .. [8672-8]

11:10 am: **Comparison of cartesian, UTE radial, and spiral Phase-Contrast MRI in measurement of blood flow in extracranial carotid arteries: normal subjects**, MJ Negahdar, Mo Kadbi, Vahid Tavakoli, Jens Heidenreich, Univ. of Louisville (USA); Andrea Yancey, Robley Rex VA Medical Ctr. (USA); Amir A. Amini, Univ. of Louisville (USA) ..... [8672-9]

11:30 am: **Cardiac deformation analysis using 3D SinMod from 3D CSPAMM tagged MRI**, Hui Wang, Amir A. Amini, Univ. of Louisville (USA) ..... [8672-10]

11:50 am: **Improved cardiac motion detection from ultrasound images using TDIOF: a combined B-mode/ tissue Doppler approach**, Vahid Tavakoli, Motaz Alshaher, Marcus F. Stoddard, Amir A. Amini, Univ. of Louisville (USA) ..... [8672-11]

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

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Conference 8673 continued

Image Perception, Observer Performance, and Technology Assessment

Room: Fiesta 1-3

SESSION 2

Room: Fiesta 1-3 ..... Sun 10:10 am to 12:10 pm

Image Perception

Session Chair: **Elizabeth A. Krupinski**, The Univ. of Arizona (USA)

10:10 am: **Influence of a-priori information on the visibility of target object**, Santosh Singh, Ankur Gupta, Siemens Information Systems Ltd. (India) ..... [8673-4]

10:30 am: **A novel graphical user interface for high-efficacy modeling of human perceptual similarity opinions**, James Kress, Boise State Univ. (USA); Songhua Xu, Georgia Tourassi, Oak Ridge National Lab. (USA) ..... [8673-5]

10:50 am: **BREAST: a novel method to improve the diagnostic efficacy of mammography**, Kriscia A. Tapia, Patrick C. Brennan, Univ. of Sydney (Australia); Warwick B. Lee, BreastScreen NSW (Australia); John Ryan, Ziltron (USA) ..... [8673-6]

11:10 am: **Perception in screening mammography: Can insertion of obvious cases enhance cancer detection?**, Sarah Lewis, Mariusz W. Pietrzyk, Robert Nurthen, Mark F. McEntee, The Univ. of Sydney (Australia); Michael G. Evanoff, The American Board of Radiology (USA); Warwick B. Lee, Patrick C. Brennan, Warren M. Reed, The Univ. of Sydney (Australia) ..... [8673-7]

11:30 am: **Is Grandma like a lichen planus? The problem of image perception and knowledge retention in pathology**, Claudia R. Mello-Thoms, Elizabeth Legowski, Eugene Tseytlin, Rebecca S. Crowley, Univ. of Pittsburgh (USA) ..... [8673-8]

11:50 am: **Characterization of human observer detection in 2-AFC volumetric detection tasks**, Ivan Diaz, François O. Bochud, Francis R. Verdun, Ctr. Hospitalier Univ. Vaudois (Switzerland); Sabine K. Kobbe-Schmidt, Ctr. Hospitalier Univ. Vaudois (Switzerland) ..... [8673-9]

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

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Conference 8669 continued

Image Processing

Rooms: Fiesta 6

SESSION 3

Room: Fiesta 6 . . . . . Sun 1:20 pm to 3:00 pm

Shape Appearance

Session Chair: **Jerry L. Prince**, Johns Hopkins Univ. (USA)

1:20 pm: **Multi-object statistical analysis of late adolescent depression**, Mahdi Ramezani, The Univ. of British Columbia (Canada); Abtin Rasouljan, Queen's Univ. (Canada); Purang Abolmaesumi, The Univ. of British Columbia (Canada); Tom Hollenstein, Ingrid Johnsrude, Kate Harkness, Queen's Univ. (Canada) . . . . . [8669-12]

1:40 pm: **Statistical shape representation with landmark clustering by solving the assignment problem**, Bulat Ibragimov, Boštjan Likar, Franjo Pernuš, Tomaž Vrtovec, Univ. of Ljubljana (Slovenia) . . . . . [8669-13]

2:00 pm: **Quantitative vertebral morphometry in 3D**, Darko Štern, Univ. of Ljubljana (Slovenia); Vesna Njagulj, Klinicki Ctr. Vojvodine (Serbia); Boštjan Likar, Franjo Pernuš, Tomaž Vrtovec, Univ. of Ljubljana (Slovenia) . . . . . [8669-14]

2:20 pm: **Combining active appearance model and deformable superquadric model for LV segmentation in cardiac MRI**, Sharath K. Gopal, Univ. of California, Los Angeles (USA) and Cedars-Sinai Medical Ctr. (USA); Demetri Terzopoulos, Univ. of California, Los Angeles (USA); Yuka Otaki, Reza Arsanjani, Daniel S. Berman, Cedars-Sinai Medical Ctr. (USA); Piotr Slomka, Cedars-Sinai Medical Ctr. (USA) and Univ. of California, Los Angeles (USA) . . . . . [8669-15]

2:40 pm: **Parsing radiographs by integrating landmark set detection and multi-object active appearance models**, Albert Montillo, Qi Song, Xiaoming Liu, GE Global Research (USA) . . . . . [8669-16]

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

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Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging

Room: Monterey 1-3

SESSION 3

Room: Monterey 1-3 . . . Sun 1:20 pm to 3:00 pm

Image Analysis and Morphology

Session Chairs: **Nicholas J. Tustison**, Univ. of Virginia (USA); **Erik Leo Ritman**, Mayo Clinic (USA)

1:20 pm: **Texture-based CT Image analysis of asthma**, Harishwaran Hariharan, Sally Wenzel, Bin Zheng, Bruce Whiting, Jiantao Pu, David Gur, Joseph K. Leader, Univ. of Pittsburgh (USA) . . . . . [8672-12]

1:40 pm: **Quantitative measurement of MR cortical atrophy: MR Brain Surface Intensity Model (BSIM) and group and individual cortical thinning studies**, Zhongmin Lin, Gopal Avinash, Kathryn McMillan, Litao Yan, Saad Sirohey, GE Healthcare (USA); Satoshi Minoshima, Univ. of Washington (USA) . . . . . [8672-13]

2:00 pm: **Statistical texture analysis based MRI quantification in a canine model of Duchenne muscular dystrophy**, Jiahui Wang, Zheng Fan, The Univ. of North Carolina at Chapel Hill (USA); Krista Vandeborne, Glenn A. Walter, Univ. of Florida (USA); Yael Shiloh-Malawsky, Hongyu An, The Univ. of North Carolina at Chapel Hill (USA); Joe N. Kornegay, Texas A&M Univ. (USA); Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8672-14]

2:20 pm: **Development of a method to image blood flow beneath the skull or tissue using ultrasonic speckle reflections**, Jeff Sadler, Zaki Ahmed, Institute for Diagnostic Imaging Research (Canada); Kiyanoosh Shapoori, Tessonics Corp. (Canada); Adrian Wydra, Institute for Diagnostic Imaging Research (Canada); Eugene V. Malyarenko, Tessonics Corp. (USA); Roman G. Maev, Institute for Diagnostic Imaging Research (Canada) . . . . . [8672-15]

2:40 pm: **MR-guided conformal microwave imaging for enhanced inclusion detection within irregularly shaped volumes**, Neil R. Epstein, Paul M. Meaney, Keith D. Paulsen, Dartmouth College (USA) . . . . . [8672-16]

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

8672 continues on page 21 

Conference 8673 continued  
Image Perception, Observer Performance, and Technology Assessment

Room: Fiesta 1-3

SESSION 3

Room: Fiesta 1-3 . . . . . Sun 1:20 pm to 3:00 pm

ROC

Session Chair: **Stephen L. Hillis**, Iowa City VA Medical Ctr. (USA)

1:20 pm: **The impact of using a JAFROC or ROC approach on the conclusions of a typical observer performance study**, Mohammad A. Rawashdeh, The Univ. of Sydney (Australia); Warwick B. Lee, NSW Cancer Institute (Australia); Mariusz W. Pietrzyk, Roger Bourne, Elaine Ryan, Warren M. Reed, Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . [8673-10]

1:40 pm: **One parameter contaminated binormal model (CBM) for analysis of difficult-to-fit ROC data**, Kevin S. Berbaum, Kevin M. Scharz, Univ. of Iowa (USA) . . . . . [8673-11]

2:00 pm: **Statistical properties of a utility measure of observer performance compared to area under the ROC curve**, Craig K. Abbey, Univ. of California, Santa Barbara (USA); Frank W. Samuelson, Brandon D. Gallas, U.S. Food and Drug Administration (USA); Loren T. Niklason, Hologic, Inc. (USA); John M. Boone, UC Davis Medical Ctr. (USA) . . . . . [8673-12]

2:20 pm: **The equivalence of a human observer and an 'ideal' observer in binary diagnostic tasks: perception as Bayesian inference through rationality encouragement**, Xin He, U.S. Food and Drug Administration (USA); Frank W. Samuelson, U.S. Food and Drug Administration (USA); Brandon D. Gallas, Berkman Sahiner, U.S. Food and Drug Administration (USA); Kyle J. Myers, U.S. Food and Drug Administration (USA) . . . . . [8673-13]

2:40 pm: **A nonparametric approach for statistical comparison of results from alternative forced choice experiments**, Frederic Noo, Adam Wunderlich, Dominic Heuschler, Zhicong Yu, Katharina Schmitt, The Univ. of Utah (USA) . . . . . [8673-14]

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

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Conference 8676 continued  
Digital Pathology

Room: Fiesta 8-10

SESSION 1

Room: Fiesta 8-10 . . . . . Sun 1:20 pm to 3:00 pm

Keynote and New Trends

Session Chairs: **Metin N. Gurcan**, The Ohio State Univ. Wexner Medical Ctr. (USA); **Anant Madabhushi**, Case Western Reserve Univ. (USA)

1:20 pm: **Dawn of the digital diagnosis assistance system, can it open a new age for pathology? (Keynote Presentation)**, Akira Saito, Eric Cosatto, NEC Corp. (USA); Tomoharu Kiyuna, NEC Corp. (Japan); Michiie Sakamoto, KEIO University (Japan) . [8676-1]

2:20 pm: **Tensor-based computation and modeling in multi-resolution digital pathology imaging: application to follicular lymphoma grading**, Evrim Acar, Univ. of Copenhagen (Denmark); Gerard Lozanski, Metin N. Gurcan, The Ohio State Univ. (USA) . . [8676-2]

2:40 pm: **Identifying in vivo DCE MRI parameters correlated with ex vivo quantitative microvessel characteristics: a radiohistomorphometric approach**, Asha Singanamalli, Case Western Reserve Univ. (USA); Rachel E. Sparks, Rutgers, The State Univ. of New Jersey (USA); Mirabela Rusu, Case Western Reserve Univ. (USA); Natalie Shih, Amy Ziober, Univ. of Pennsylvania (USA); John E. Tomaszewski, Univ. at Buffalo (USA); Mark Rosen, Michael Feldman, Univ. of Pennsylvania (USA); Anant Madabhushi, Case Western Reserve Univ. (USA) . . . . . [8676-3]

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Conference 8669 continued  
Image Processing

Rooms: Fiesta 6

SESSION 4

Room: Fiesta 6 ..... Sun 3:30 pm to 5:30 pm

Temporal and Motional Analysis

Session Chair: **Martin A. Styner**,  
The Univ. of North Carolina at Chapel Hill (USA)

3:30 pm: **Multiple sclerosis lesions evolution in patients with clinically isolated syndrome**, Alessandro Crimi, Olivier Commowick, INRIA/IRISA (France); Gilles Edan, Ctr. Hospitalier Univ. de Rennes (France); Christian Barillot, INRIA/IRISA (France) ..... [8669-17]

3:50 pm: **Landmark detection and coupled patch registration for cardiac motion tracking**, Haiyan Wang, Wenzhe Shi, Biomedical Image Analysis Group, Imperial College London (UK); Xiaohai Zhuang, Shanghai Advanced Research Institute, Chinese Academy of Sciences (China); Xianliang Wu, Imperial College London (UK); Sebastien Oursellin, Ctr. for Medical Image Computing, Univ. College London (UK); Philip J. Edwards, Imperial College London (UK); Daniel Rueckert, Biomedical Image Analysis Group, Imperial College London (UK) ..... [8669-18]

4:10 pm: **Voxel-wise displacement as independent features in classification of multiple sclerosis**, Min Chen, Aaron Carass, Johns Hopkins Univ. (USA); Daniel S. Reich, National Institute of Neurological Disorders and Stroke (USA); Peter Calabresi, Johns Hopkins School of Medicine (USA); Dzung Pham, Ctr. for Neuroscience and Regenerative Medicine (USA); Jerry L. Prince, Johns Hopkins Univ. (USA) ..... [8669-19]

4:30 pm: **pCT derived arterial input function for improved pharmacokinetic analysis of longitudinal dceMRI for colorectal cancer**, Monica Enescu, Manav Bhushan, Institute of Biomedical Engineering (UK); Esme J. Hill, Jamie Franklin, Ewan M. Anderson, Ricky A. Sharma, Oxford Univ. Hospitals NHS Trust (UK); Julia A. Schnabel, Institute of Biomedical Engineering (UK) ..... [8669-20]

4:50 pm: **Registration of multiple temporally related point sets using a novel variant of the coherent point drift algorithm: application to coronary tree matching**, Séverine Habert, Siemens Corporate Research (USA) and Ecole Polytechnique de Montréal (Canada); Parmeshwar Khurd, Christophe Chefhdotel, Siemens Corporate Research (USA) ..... [8669-21]

5:10 pm: **Contextual filtering in curvelet domain for fluoroscopic sequences**, Carole Amiot, Jérémie Pescatore, Thales Electron Devices (France); Jocelyn Chanussot, Michel Desvignes, Gipsa-Lab (France) ..... [8669-22]

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Conference 8672 continued  
Biomedical Applications in  
Molecular, Structural, and Functional Imaging

Room: Monterey 1-3

SESSION 4

Room: Monterey 1-3 ..... Sun 3:30 pm to 5:30 pm

Brain Imaging and Therapy

Session Chairs: **Andrzej Krol**, SUNY Upstate Medical Univ. (USA);  
**Axel Wismueller**, Univ. of Rochester Medical Ctr. (USA)

3:30 pm: **Introducing anisotropic Minkowski Functionals and quantitative anisotropy measures for local structure analysis in biomedical imaging**, Axel Wismueller, Titas De, Mahesh B. Nagarajan, Univ. of Rochester Medical Ctr. (USA) ..... [8672-17]

3:50 pm: **Fuzzy object models for newborn brain MR image segmentation**, Syoji Kobashi, Univ. of Pennsylvania (USA) and Univ. of Hyogo (Japan); Jayaram K. Udupa, Univ. of Pennsylvania (USA) . . . [8672-18]

4:10 pm: **The ANTs cortical thickness processing pipeline**, Nicholas J. Tustison, Univ. of Virginia (USA); Brian B. Avants, Philip A. Cook, Gang Song, Sandhitsu Das, Univ. of Pennsylvania (USA); Niels van Strien, Norwegian Univ. of Science and Technology (Norway); James R. Stone, Univ. of Virginia (USA); James C. Gee, Univ. of Pennsylvania (USA) [8672-19]

4:30 pm: **CT image feature analysis in distinguishing radiation fibrosis from tumour recurrence after stereotactic ablative radiotherapy (SABR) for lung cancer: a preliminary study**, Sarah A. Mattonen, Western Univ. of Health Sciences (Canada); David A. Palma, Western Univ. of Health Sciences (Canada) and London Regional Cancer Program (Canada); Cornelis J. A. Haasbeek, Suresh Senan, VU Univ. Medical Ctr. (Netherlands); Aaron D. Ward, Western Univ. of Health Sciences (Canada) ..... [8672-20]

4:50 pm: **Lateral ventricle morphology analysis via mean latitude axis**, Beatriz Paniagua, Amanda Lyall, Jean-Baptiste Berger, The Univ. of North Carolina at Chapel Hill (USA); Clement Vachet, The Univ. of Utah (USA); Robert Hamer, Sandra Woolson, Weili Lin, John Gilmore, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) ..... [8672-21]

5:10 pm: **Influence of different sources of noise on epileptic spike EEG source localization**, Yazdan Shirvany, Xinyuan Chen, Prathamesh Sharad Dhanpalwar, Mikael Persson, Chalmers Univ. of Technology (Sweden) ..... [8672-22]

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Conference 8673 continued  
Image Perception, Observer Performance,  
and Technology Assessment

Room: Fiesta 1-3

SESSION 4

Room: Fiesta 1-3 ..... Sun 3:30 pm to 5:30 pm

Model Observers

Session Chair: **Jovan G. Brankov**, Illinois Institute of Technology (USA)

3:30 pm: **Two complementary model observers to evaluate reconstructions of simulated micro-calcifications in digital breast tomosynthesis**, Koen Michiels, Katholieke Univ. Leuven (Belgium); Federica Zanca, Nicholas W. Marshall, Hilde Bosmans, UZ Leuven (Belgium); Johan Nuyts, Katholieke Univ. Leuven (Belgium) . . . . . [8673-15]

3:50 pm: **Integration of spatio-temporal contrast sensitivity with a multislice channelized Hotelling observer**, Ali Avanaki, Kathryn Espig, Barco, Inc. (USA); Cédric Marchessoux, Barco N.V. (Belgium); Elizabeth A. Krupinski, The Univ. of Arizona (USA); Predrag R. Bakic, The Univ. of Pennsylvania Health System (USA); Tom Kimpe, Barco N.V. (Belgium); Andrew Maidment, University of Pennsylvania (USA) . . . . . [8673-16]

4:10 pm: **Exact confidence intervals for channelized Hotelling observer performance**, Adam Wunderlich, Frederic Noo, Marta Heilbrun, The Univ. of Utah (USA) . . . . . [8673-17]

4:30 pm: **Objectively measuring signal detectability, contrast, blur and noise in medical images using channelized joint observers**, Bart Goossens, Hiep Luong, Univ. Gent (Belgium); Ljiljana Plati?a, Univ. Gent (Belgium); Wilfried Philips, Univ. Gent (Belgium) . . . . . [8673-18]

4:50 pm: **Model mismatch and the ideal observer in SPECT**, Michael Ghaly, Jonathan M. Links, Yong Du, Eric C. Frey, Johns Hopkins Univ. (USA) . . . . . [8673-19]

5:10 pm: **Tests of a 3D visual-search model observer for SPECT**, Howard C. Gifford, Univ. of Houston (USA) . . . . . [8673-20]

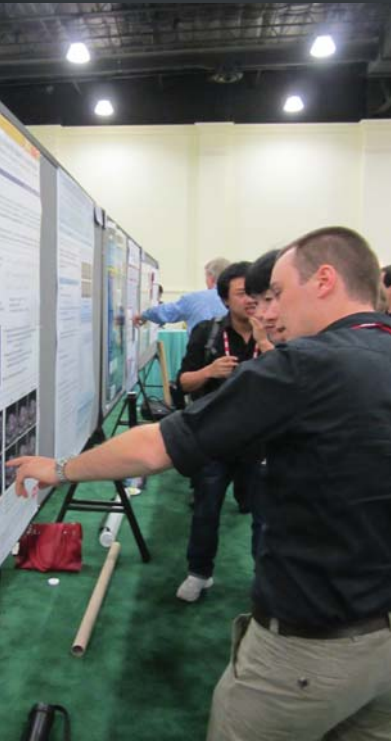
**WORKSHOP**  
**ROC Analysis: A tribute to Charlie Metz and an assessment of the State of the Art**

Fiesta 1-3 · Sun. 5:45 to 7:45 pm

Workshop Chairs: **Yulei Jiang**, The Univ. of Chicago Medical Ctr. (USA), **Craig K. Abbey**, Univ. of California, Santa Barbara (USA), **Claudia R. Mello-Thoms**, Univ. of Pittsburgh Cancer Institute (USA)

See Special Events for additional information.

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Posters for this conference will be on display Sunday and Monday in Veracruz C. The interactive poster session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room, check conference schedules for exact time.

**Poster Authors:** Please put up your poster during the Sunday morning coffee break. Posters will be available for viewing Sunday and Monday. Stand with your poster during the poster session from 5:00 to 6:30 pm on Monday, and please remove it no later than 9:00 pm. Posters remaining on the boards after the extended viewing time on Monday will be discarded.

See p. 37-46 for Tuesday/  
Wednesday Posters

**Conference 8669 Posters**  
**Image Processing**

Session Chairs: **Bennett A. Landman**, Vanderbilt Univ. (USA); **Wiro J. Niessen**, Erasmus MC (Netherlands)

**Atlases**

**Combined pixel classification and atlas-based segmentation of the ventricular system in brain CT Images**, Pieter C. Vos, Image Sciences Institute, Univ. Medical Ctr. Utrecht (Netherlands); Ivana Isgum, J. Matthijs Biesbroek, Birgitta K. Velthuis, Univ. Medical Ctr. Utrecht (Netherlands); Max A. Viergever, Image Sciences Institute (Netherlands) . . . . . [8669-59]

**Constructing a 4D murine cardiac micro-CT atlas for automated segmentation and phenotyping applications**, Darin P. Clark, Alexandra Badaea, G. Allan Johnson, Cristian T. Badaea, Ctr. for In Vivo Microscopy (USA) . . . . . [8669-60]

**Build 4-dimensional myocardial model for low dose CT images**, Yixun Liu, Songtao Liu, National Institutes of Health (USA); Albert C. Lardo, Johns Hopkins Bayview Medical Ctr. (USA); Marcelo N. Nacif, David A. Bluemke, Ronald M. Summers, Jianhua Yao, National Institutes of Health (USA) . . . . . [8669-61]

**Blood Vessels**

**A new morphological tool to extract blood vessels in cross sectional MRI**, Cédric Blanchard, Tadeusz Sliwa, Alain Lalande, Olivier Bouchot, Yvon Voisin, Univ. de Bourgogne (France) . . . . . [8669-62]

**Automatic vessel extraction of lower extremity CT angiography using multi-segmented volume and local vessel tracking**, Min Jin Lee, Helen Hong, Seoul Women's Univ. (Korea, Republic of); Jin Wook Chung, Seoul National Univ. Hospital (Korea, Republic of); In Joon Lee, National Cancer Ctr. (Korea, Republic of) . [8669-63]

**Automatic detection of retinal vascular bifurcations and crossovers based on isotropy and anisotropy**, Guodong Li, Dehui Xiang, Fei Yang, Xiaonan Wan, Jie Tian, Xin Yang, Institute of Automation (China) . . . . . [8669-64]

**Automatic liver vessels segmentation using histogram modeling and vessel separation with multi-seeding points in abdominal contrast-enhanced CT images**, Yujin Jang, Helen Hong, Seoul Women's Univ. (Korea, Republic of); Jin Wook Chung, Seoul National Univ. Hospital (Korea, Republic of) . . . . . [8669-65]

**A hardware implementation of a levelset algorithm for carotid lumen segmentation in CTA**, Andre van der Avoird, Ning Lin, BIC Design B.V. (Netherlands); Bram van Ginneken, Rashindra Mannesing, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8669-66]

**Automated artery and vein detection in dynamic CT data with an unsupervised classification algorithm of the time intensity curves**, Hendrik O. A. Laue, Fraunhofer MEVIS (Germany); Marcel T. H. Oei, Diagnostic Image Analysis Group, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Longquan Chen, Ina N. Kompan, Horst K. Hahn, Fraunhofer MEVIS (Germany); Mathias Prokop, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Rashindra Mannesing, Diagnostic Image Analysis Group, Radboud Univ. Medical Ctr. (Netherlands) . . . . . [8669-67]

**3D multiscale vessel enhancement based centerline extraction of blood vessels**, Rahul P. Kumar, Oslo Univ. Hospital (Norway) and Univ. of Oslo (Norway); Fritz Albrechtsen, Martin Reimers, Univ. of Oslo (Norway); Thomas Langø, SINTEF (Norway); Bjørn Edwin, Oslo University Hospital (Norway); Ole Jakob Elle, Oslo Univ. Hospital (Norway) and Univ. of Oslo (Norway) . . . . . [8669-68]

**Classification**

**A method for automated anatomical labeling of abdominal veins extracted from 3D CT images**, Tetsuro Matsuzaki, Masahiro Oda, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Yuichiro Hayashi, Nagoya Univ. (Japan); Kazunari Misawa, Aichi Cancer Ctr. Hospital (Japan); Kensaku Mori, Nagoya Univ. (Japan) . . . . . [8669-69]

**Graph-based bifurcation detection in phase-contrast MR images**, Yoo-Jin Jeong, Karlsruher Institut für Technologie (Germany); Sebastian Ley, Univ. Hospital Heidelberg (Germany) and Univ. of Toronto (Canada); Michael Delles, Rüdiger Dillmann, Roland Unterhinninghofen, Karlsruher Institut für Technologie (Germany) . . . . . [8669-70]

**Optimal filter approach for the detection of vessel bifurcations in color fundus images**, Qiao Hu, The Univ. of Iowa (USA); Mona K. Garvin, The Univ. of Iowa (USA) and Ctr. of Excellence for Prevention and Treatment of Visual Loss (USA); Mark A. Christopher, Xiayu Xu, The Univ. of Iowa (USA); Todd E. Scheetz, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa (USA) and Institute for Vision Research, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [8669-71]

**Data-specific feature point descriptor matching using dictionary learning and graphical models**, Ricardo Guerrero, Daniel Rueckert, Imperial College London (UK) . . . . . [8669-72]

**Automated temperature calculation method for DWI-thermometry: volunteer study**, Koji Sakai, Kyoto Univ. (Japan); Kei Yamada, Kyoto Prefectural Univ. of Medicine (Japan); Naoto Sugimoto, Kyoto Univ. (Japan) . . . . . [8669-73]

**Colour and multispectral imaging for wound healing evaluation in the context of a comparative clinical study**, Yves Lucas, Dorra Nouri, Sylvie Treuillet, Univ. d'Orléans (France) . . . . . [8669-74]

**Wound image analysis system for diabetics**, Lei Wang, Peder C. Pedersen, Emmanuel Agu, Diane M. Strong, Bengisu Tulu, Worcester Polytechnic Institute (USA) . . . . . [8669-75]

**Clustering of lung adenocarcinomas classes using automated texture analysis on CT images**, Antonio Pires, NYU School of Medicine (USA) . . [8669-76]

**Morphometric connectivity analysis to distinguish normal, mild cognitive impaired, and Alzheimer subjects based on brain MRI**, Lene Lillemark, Lauge Sørensen, Univ. of Copenhagen (Denmark); Peter Mysling, University of Copenhagen, Department of Computer Science (Denmark); Akshay Pai, Univ. of Copenhagen (Denmark); Erik B. Dam, Biomediq (Denmark); Mads Nielsen, Univ. of Copenhagen (Denmark) and Biomediq AS (Denmark) . . . . . [8669-77]

**Deformation texture-based features for classification in Alzheimer's disease**, Nhat Trung Doan, Leiden Univ. Medical Ctr. (Netherlands); Baldur van Lew, Leiden University Medical Center (Netherlands); Boudewijn P. F. Lelieveldt, Mark A. van Buchem, Johan H. C. Reiber, Julien Milles, Leiden Univ. Medical Ctr. (Netherlands) . . . . . [8669-78]

**Compressive Sensing**  
**3D spatio-temporal analysis for compressive sensing in magnetic resonance imaging of the murine cardiac cycle**, Brice Hirst, Yahong Zheng, Missouri Univ. of Science and Technology (USA); Ming Yang, Lixin Ma, Univ. of Missouri - Columbia (USA) . . . . . [8669-79]

**Curvelets as a sparse basis for compressed sensing magnetic resonance imaging**, David S. Smith, Edward B. Welch, Vanderbilt Univ. (USA) . . . . . [8669-80]

**Diffusion Tensor Imaging**

**Software-based diffusion MR human brain phantom for evaluating fiber-tracking algorithms**, Yundi Shi, The Univ. of North Carolina at Chapel Hill School of Medicine (USA); Gwendoline Roger, The Univ. of North Carolina at Chapel Hill (USA); Clement Vachet, The Univ. of North Carolina at Chapel Hill (USA); Francois Budin, Eric Maltbie, The Univ. of North Carolina at Chapel Hill School of Medicine (USA); Audrey Verde, Marion Hoogstoel, Jean-Baptiste Berger, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8669-82]

**Connectivity-based parcellation of the postcentral gyrus using a spectral approach**, Tristan Moreau, Bernard Gibaud, Equipe INSERM MediCIS. Unité U1099 LTSI. (France) . . . . . [8669-84]

**DTI quality control assessment via error estimation from Monte Carlo simulation**, Mahshid Farzinfar, Yinpeng Li, Audrey Verde, Ipek Oguz, The Univ. of North Carolina at Chapel Hill (USA); Guido Gerig, Univ. of Utah (USA); Martin A. Styner, Univ. of North Carolina at Chapel Hill (USA) . . . . . [8669-85]



**UNC-Utah NA-MIC DTI framework: atlas based fiber tract analysis with application to a study of nicotine smoking addiction**, Audrey R. Verde, Jean-Baptiste Berger, The Univ. of North Carolina at Chapel Hill (USA); Aditya Gupta, The Univ. of North Carolina at Chapel Hill (USA) and Children's Hospital of Pittsburgh, Univ. of Pittsburgh (USA); Mahshid Farzinfar, Adrien Kaiser, Vicki W. Chanon, Charlotte A. Boettiger, The Univ. of North Carolina at Chapel Hill (USA); Hans Johnson, Joy Matsui, University of Iowa (USA); Anuja Sharma, Scientific Computing and Imaging Institute, Univ. of Utah (USA); Casey Goodlett, Kitware, Inc. (USA); Yundi Shi, The Univ. of North Carolina at Chapel Hill School of Medicine (USA); Guido Gerig, Sylvain Gouttard, Scientific Computing and Imaging Institute, Univ. of Utah (USA); Clement Vachet, The Univ. of North Carolina at Chapel Hill (USA) and Scientific Computing and Imaging Institute, Univ. of Utah (USA); Hongtu Zhu, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . [8669-86]

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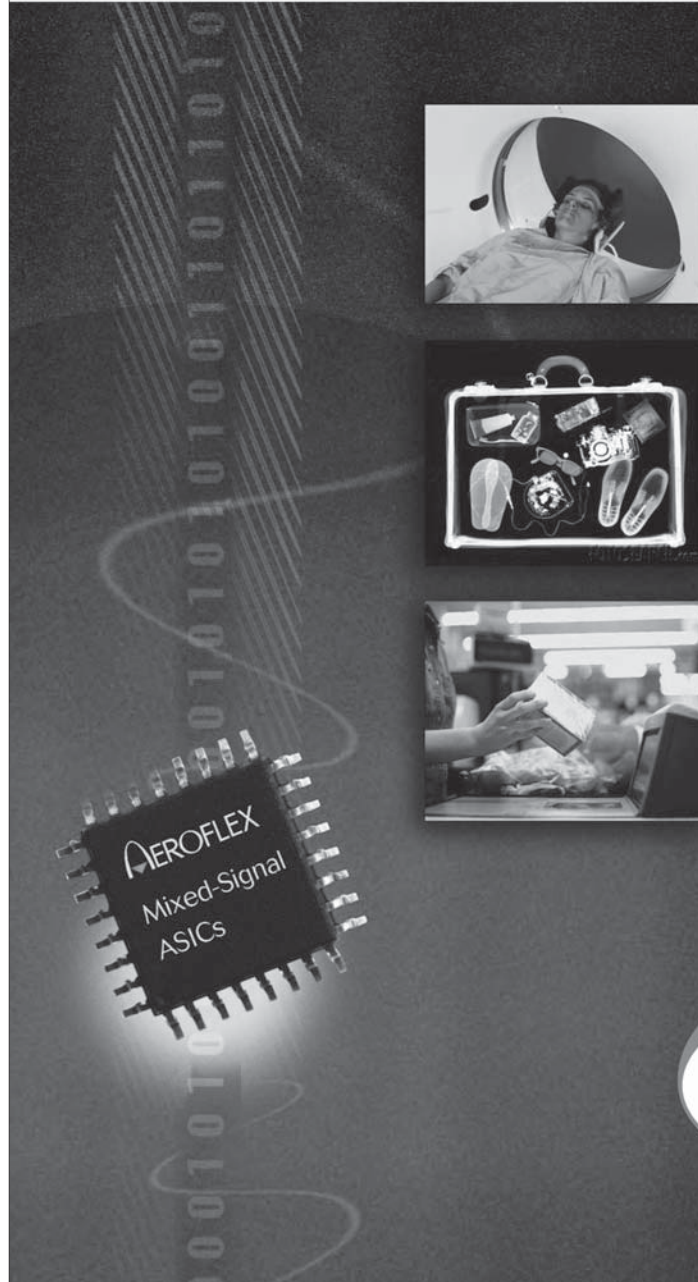
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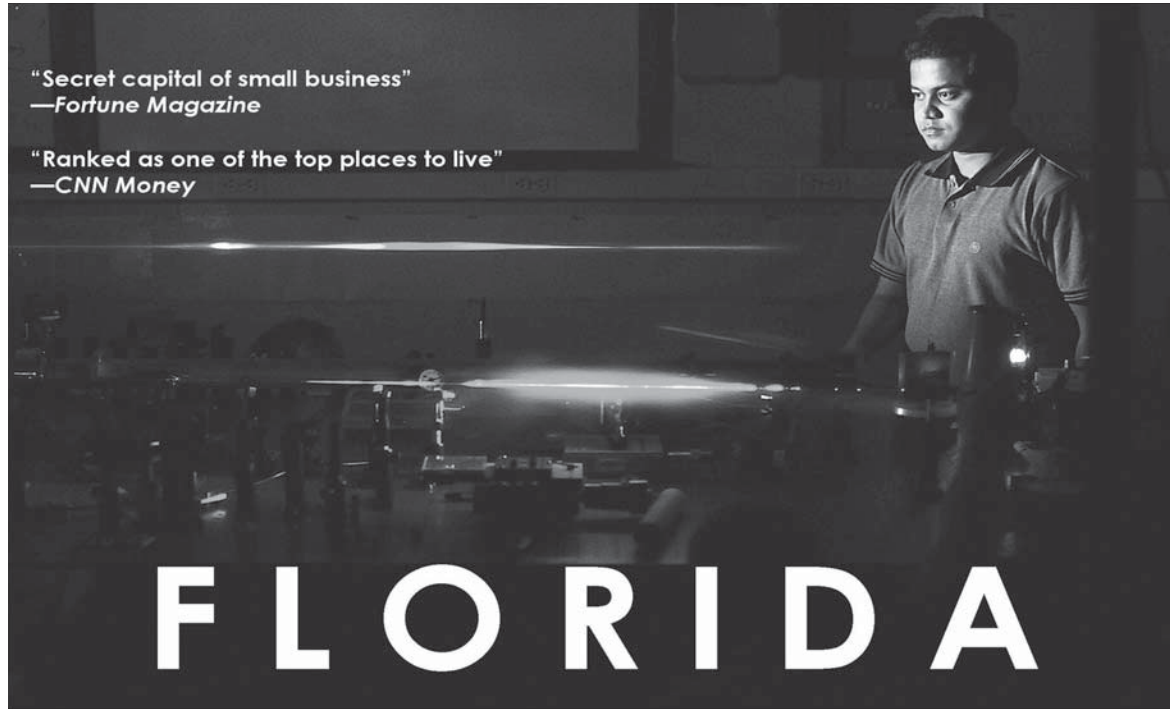
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**The effect of viewing distance on observer performance in skeletal radiographs**, Marie Louise Butler, Joanna Lowe, Rachel J. Toomey, Marion Maher, Univ. College Dublin (Ireland); Michael G. Evanoff, The American Board of Radiology (USA); John Ryan, Louise A. Rainford, Univ. College Dublin (Ireland) . . . . . [8673-40]

**Breast screening: understanding case difficulty and the nature of errors**, Alastair G. Gale, Leng Dong, Yan Chen, Loughborough Univ. (UK) . . . . . [8673-41]

**Immersive virtual reality for visualization of abdominal CT**, Qiufeng Lin, Zhoubing Xu, Rebecca Baucom, Benjamin K. Poulouse, Bennett A. Landman, Robert E. Bodenheimer, Vanderbilt Univ. (USA) . . . . . [8673-42]

**Altered resting-state functional connectivity in post-traumatic stress disorder: a perfusion MRI study**, Baojuan Li, Fourth Military Medical Univ. (China); Jian Liu, College of Mechatronics and Automation, National Univ. of Defense Technology (China); Yang Liu, Hong-Bing Lu, Fourth Military Medical Univ. (China); Hong Yin, Xijing Hospital, Fourth Military Medical Univ. (China) . . . . . [8673-43]

**Does image reduction affect the diagnostic accuracy of digital mammograms?**, Yumi Takane, Yusuke Kawasumi, Tsunemitsu Horie, Tadashi Ishibashi, Tohoku Univ. Graduated School of Medicine (Japan) . . . . . [8673-44]

**Deviance statistics in model fit and selection in ROC studies**, Tianhu Lei, Kyongtae T. Bae, UPMC Presbyterian (USA) . . . . . [8673-45]

**Visibility of single spiculations in breast tomosynthesis**, Pontus A. S. Timberg, Magnus Dustler, Daniel Förnvik, Sophia Zackrisson, Scania Univ. Hospital (Sweden) . . . . . [8673-46]

**Assessment of image quality in orthopedic radiography with digital detectors: a visual grading analysis**, Robin Decoster, Harrie Mol, Renaat Van den Broeck, Dirk Smits, Hogeschool-Univ. Brussel (Belgium) . . . . . [8673-47]

**Model-based Bayesian inference for ROC data analysis**, Tianhu Lei, Kyongtae T. Bae, UPMC Presbyterian (USA) [8673-48]

**Development of a digital rectangular phantom for quality controls of medical primary B / W and CL monitors in RIS-PACS system**, Alessia Mattacchioni, Marco Cristianini, Alessia Lo Bosco, Health Physics Service, AUSL RMH (Italy) . . . . . [8673-49]

**Prediction of near-term breast cancer risk using a Bayesian belief network**, Bin Zheng, Pandiyarajan Ramalingam, Harishwaran Hariharan, Univ. of Pittsburgh (USA); Joseph K. Leader, UPMC Presbyterian (USA); David Gur, Univ. of Pittsburgh School of Medicine (USA) . . . . . [8673-50]

**A new assessment method for image fusion quality**, Liu Li, Xuming Zhang, Wanying Jiang, Jing Li, Yuchi Ming, Mingyue Ding, Huazhong Univ. of Science and Technology (China) . . . . . [8673-51]

**Application of a computed tomography-based cystic fibrosis scoring system on chest tomosynthesis**, Christina Söderman, Göteborg Univ. (Sweden); Åse Johnsson, Jenny Vikgren, Sahlgrenska Univ. Hospital (Sweden); Hans Rystedt, Jonas Ivarsson, Univ. of Gothenburg (Sweden); Lisbeth Denbratt, Rauni Rossi Norrlund, Lena Nyberg Andersson, Sahlgrenska Univ. Hospital (Sweden); Magnus Båth, Sahlgrenska Univ. Hospital (Sweden) and Univ. of Gothenburg (Sweden) . . . . . [8673-52]

**An initial investigation of radiologist eye movements in vascular imaging**, Rachel J. Toomey, Univ. College Dublin (Ireland); Scott Hodgins, Acuity ETS (UK); Michael G. Evanoff, The American Board of Radiology (USA); Louise A. Rainford, Univ. College Dublin (Ireland) . . . . . [8673-53]

**The value of the cranial-caudal mammographic view in breast cancer detection: a preliminary study**, Phuong Dung Trieu, Patrick C. Brennan, Mariusz W. Pietrzyk, The Univ. of Sydney (Australia); Elaine Ryan, Discipline of Medical Radiation Sciences, Faculty of Health Sciences, the University of Sydney (Australia); Warren Reed, Discipline of Medical Radiation Sciences, Faculty of Health Sciences, the University of Sydney (Australia); Warwick Lee, Screen New South Wales, Cancer Institute, Alexandria NSW 1435, Australia (Australia) . . [8673-54]

**Assessment of methods to extract the mid-sagittal plane from brain MR images**, Hugo J. Kuijf, Univ. Medical Ctr. Utrecht (Netherlands); Alexander Leemans, Max A. Viergever, Koen L. Vincken, Image Sciences Institute (Netherlands) .[8673-55]

**A study of the feasibility of using slabbing to reduce tomosynthesis review time**, Magnus Dustler, Martin Andersson, Daniel Förnvik, Medical Radiation Physics, Lund Univ. (Sweden); Pontus A. S. Timberg, Diagnostic Radiology, Lund Univ. (Sweden); Anders Tingberg, Medical Radiation Physics, Lund Univ. (Sweden) . . . . .[8673-56]

**Comparing the Microsoft® Kinect™ and traditional mouse for adjusting viewed tissue density of three-dimensional anatomical structures**, Bethany Juhnke, Iowa State Univ. (USA); Monica Berron, Univ. of Maryland, Baltimore County (USA); Adriana Philip, The Pennsylvania State Univ. (USA); Jordan Williams, Univ. of Maryland, Baltimore County (USA); Jung Leng Foo, Iowa State Univ. (USA); Eliot Winer, Iowa State Univ. (USA) . . . . .[8673-57]

**Potential method for relieving fatigue in radiologists**, Elizabeth A. Krupinski, The Univ. of Arizona (USA) . . . . .[8673-58]

**Availability of color calibration for consistent color display in medical images and optimization of reference brightness for clinical use**, Daiki Iwai, Nagoya Univ. Graduate School of Medicine (Japan); Haruka Suganamis, Minoru Hosoba, Kazuko Ohno, Yutaka Emoto, Yoshito Tabata, Kyoto College of Medical Science (Japan); Norihisa Matsui, Shimadzu Corp. (Japan) . . . . .[8673-59]

**Analysis of detectability loss through fan-beam x-ray computed tomography reconstruction**, Adrian A. Sanchez, The Univ. of Chicago Medical Ctr (USA); Emil Y. Sidky, Xiaochuan Pan, The Univ. of Chicago Medical Ctr. (USA) . . . . .[8673-60]

**Study of CT systems low contrast detectability performance using mathematical model observers**, Jiahua Fan, GE Healthcare (USA); Hsin-Wu Tseng, The Univ. of Arizona (USA) and GE Healthcare (USA); Guangzhi Cao, Paavana Sainath, GE Healthcare (USA); Matthew A. Kupinski, College of Optical Sciences, The Univ. of Arizona (USA) . . . . .[8673-61]

**Cardiovascular CTA applications: patient-specific contrast formulae**, Charbel Saade, American Univ. of Beirut (Lebanon) and The Univ. of Sydney (Australia); Roger Bourne, The Univ. of Sydney (Australia); Mark Wilkinson, Royal Prince Alfred Hospital (Australia); Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . .[8673-62]

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## Conference 8676 Posters Digital Pathology

**A novel phantom system facilitating better descriptors of density within mammographic images: a work in progress**, Yanpeng Li, Patrick C. Brennan, The Univ. of Sydney (Australia); Carolyn Nickson, The Univ. of Melbourne (Australia); Mariusz W. Pietrzyk, Elaine Ryan, The Univ. of Sydney (Australia) . . . . .[8673-63]

**Use of an imaging colorimeter for image quality evaluation**, Hans Roehrig, The Univ. of Arizona (USA) . . . . .[8673-64]

**Quantitative analysis of TDLUs using adaptive morphological shape techniques**, Adrian Rosebrock, Univ. of Maryland, Baltimore County (USA); Jesus J. Caban, Walter Reed National Military Medical Ctr. (USA); Jonine Figueroa, Gretchen Gierach, Laura Linville, National Cancer Institute (USA); Stephen M. Hewitt, Mark E. Sherman, National Institutes of Health (USA) . . . . .[8676-22]

**Assessing color reproducibility of a whole slide-imaging scanner**, Wei-Chung Cheng, U.S. Food and Drug Administration (USA); Tyler Keay, Neil O'Flaherty, Joel Wang, Adam Ivansky, U.S. Food and Drug Administration (USA); Marios A. Gavrielides, Brandon D. Gallas, Aldo Badano, U.S. Food and Drug Administration (USA) . . . . .[8676-23]

**An algorithm to evaluate the number of trabecular cell layers using nucleus arrangement applied to hepatocellular carcinoma**, Hideki Komagata, Naoki Kobayashi, Ayako Katoh, Yasuka Ohnuki, Saitama Medical Univ. (Japan); Masahiro Ishikawa, Tokyo Institute of Technology (Japan); Kazuma Shinoda, Saitama Medical Univ. (Japan); Masahiro Yamaguchi, Tokyo Institute of Technology (Japan); Tokiya Abe, Akinori Hashiguchi, Michie Sakamoto, Keio Univ. (Japan) . . . . .[8676-21]

**Calibration and test of a multispectral imaging prototype for intra-operative surgical assistance**, Yves Lucas, Univ. d'Orléans (France); Dorra Nouri, Sylvie Treuillet, Univ. d'Orléans (France) [8676-24]

**An adaptive image representation learned from data for cervix cancer tumor detection**, Angel Cruz Roa, Eduardo Romero Castro, Fabio González Osorio, Univ. Nacional de Colombia (Colombia). . . . . [8676-25]

**A level-set method for pathology segmentation in fluorescein angiograms and en face retinal images of patients with age-related macular degeneration**, Fatimah Mohammad, Rashid Ansari, Mahnaz Shahidi, Univ. of Illinois at Chicago (USA) . . . . . [8676-26]

**Meningioma subtype classification using morphology features and Random Forests**, Harry Strange, Reyer Zwiggelaar, Aberystwyth Univ. (UK) . . . . . [8676-27]

**Quantification of relative chromatin content in Flow Cytometry standards using 3D OPTM Imaging technique**, Nitin Agarwal, Univ. of Washington (USA); Alberto Biancardi, Cornell Univ. (USA); Florence Patten, VisionGate, Inc. (USA); Anthony P. Reeves, Cornell Univ. (USA); Eric J. Seibel, Univ. of Washington (USA) . . . . . [8676-28]

**Learning semantic histopathological representation for basal cell carcinoma classification**, Ricardo Gutiérrez, Univ. Nacional de Colombia (Colombia); Andrea Rueda, Univ. Nacional de Colombia (Colombia); Eduardo Romero Castro, Univ. Nacional de Colombia (Colombia). . . . . [8676-29]

**Analysis of the spatial distribution of prostate cancer obtained from histopathological images**, Kristians E. Diaz Rojas, Benjamin Castañeda, María L. Montero, Pontificia Univ. Católica del Perú (Peru); Jorge L. Yao, Deborah J. Rubens, Jean V. Joseph, Univ. of Rochester Medical Ctr. (USA); Kevin J. Parker, Univ. of Rochester (USA) . . . . . [8676-30]

**Computer assisted detection of regions of interest in histopathology using a hybrid supervised and unsupervised approach**, Alessandro Gherardi, ARCES - Univ. degli Studi di Bologna (Italy); Alessandro Bevilacqua, ARCES - Univ. degli Studi di Bologna (Italy) and DEIS - Dept. of Electronics, Computer Science and Systems (Italy) . . . . . [8676-31]

**Fast GPU-based segmentation of H&E stained squamous epithelium from multi-gigapixel tiled virtual slides**, Benjamin Bryant, Hamed Sari-Sarraf, Mitchell Wachtel, Texas Tech Univ., Applied Vision Lab. (USA); Sameer Antani, National Library of Medicine (USA); Rodney Long, National Library of Medicine (USA) . . . . . [8676-32]

**Automatic classification of hepatocellular carcinoma images based on nuclear and structural features**, Tomoharu Kiyuna, Akira Saito, Atsushi Marugame, Yoshiko Yamashita, Maki Ogura, NEC Corp. (Japan); Eric Cosatto, NEC Labs. America, Inc. (USA); Tokiya Abe, Akinori Hashiguchi, Michieie Sakamoto, Keio Univ. (Japan) . . . . . [8676-33]

**Marked point processes with simple and complex shape objects for cell nuclei extraction from breast cancer H&E images**, Christophe Avenel, Univ. Pierre et Marie Curie (France); Maria S. Kulikova, CNRS IPAL UMI (Singapore) . . . . . [8676-34]

**Medical image fusion based on Spiking Cortical Model**, Rui Wang, Yi Wu, Mingyue Ding, Xuming Zhang, Huazhong Univ. of Science and Technology (China) . [8676-35]

**Automatic segmentation of hepatocellular structure from HE-stained liver tissue**, Masahiro Ishikawa, Sercan Taha Ahi, Yuri Murakami, Fumikazu Kimura, Masahiro Yamaguchi, Tokyo Institute of Technology (Japan); Tokiya Abe, Akinori Hashiguchi, Michieie Sakamoto, Keio Univ. (Japan) . . . . . [8676-36]

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 1**  
Room: Fiesta 5 . . . . . Mon 8:00 am to 9:40 am

**Keynote and Volumetrics of the Brain**

Session Chairs: **Robert M. Nishikawa**, The Univ. of Chicago (USA); **Bruce R. Whiting**, Univ. of Pittsburgh (USA)

8:00 am: **Volumetrics of the brain: a tale of missiles, mice, rain, hydrocephalus, and epilepsy** (*Keynote Presentation*), Steven J. Schiff, The Pennsylvania State Univ. (USA)[8668-1]

9:00 am: **Possible dose reduction by dose-rate measurements using mobile phones/tablets combined with tabulated imaging procedure/radiation doses**, Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany); William W. Orrison, Nevada Imaging Ctrs. (USA); Rolf-Dieter Klein, Ingenieurbuero Klein (Germany); Mathias M. A. Reichl, RGB Lasersystems GmbH (Germany); Peter Cartwright, Nevada Imaging Ctrs. (USA) . . . . . [8668-2]

9:20 am: **Development of matched virtual and physical breast phantoms based on patient data**, Nooshin Kiarashi, Gregory M. Sturgeon, Loren W. Nolte, Joseph Y. Lo, William P. Segars, Ehsan Samei, Duke Univ. (USA) . . . . . [8668-3]

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

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 5**  
Room: Fiesta 6 . . . . . Mon 8:00 am to 9:40 am

**OCT and Ultrasound**

Session Chair: **Aaron Fenster**, Robarts Research Institute (Canada)

8:00 am: **Multimodal segmentation of optic disc and cup from stereo fundus and SD-OCT Images**, Mohammad Saleh Miri, Kyungmoo Lee, Meindert Niemeijer, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa (USA) and U. S. Depart. of Veterans Affairs (USA); Young H. Kwon, The Univ. of Iowa (USA); Mona K. Garvin, The Univ. of Iowa (USA) and U. S. Depart. of Veterans Affairs (USA) [8669-23]

8:20 am: **Ultrasound image segmentation using feature asymmetry and shape guided live wire**, Thomas M. Rackham, Sylvia Rueda, IBME, Univ. of Oxford (UK); Caroline L. Knight, Univ. of Oxford (UK); J. Alison Noble, IBME, Univ. of Oxford (UK) . . . . . [8669-24]

8:40 am: **Automatic ultrasound image segmentation for right ventricle using sparse matrix transform and level set**, Xulei Qin, Zhibin Cong, Luma V. Halig, Baowei Fei, Emory Univ. (USA) . . [8669-25]

9:00 am: **Segmentation of retinal OCT images using a random forest classifier**, Andrew Lang, Jerry L. Prince, Aaron Carass, Johns Hopkins Univ. (USA); Elias Sotirchos, Peter Calabresi, Johns Hopkins Univ. School of Medicine (USA) . . [8669-26]

9:20 am: **Classification of atorvastatin effect based on shape and texture features in ultrasound images**, Xin Yang, Huazhong Univ. of Science and Technology (China); Rui Wang, Huazhong Univ. of Science and Technology (China); Liu Li, Huazhong Univ. of Science and Technology (China); Aaron Fenster, The Univ. of Western Ontario (Canada); Mingyue Ding, Huazhong Univ. of Science and Technology (China) . . . . . [8669-27]

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

Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging  
Room: Monterey 1-3

**SESSION 5**  
Room: Monterey 1-3 Mon 8:00 am to 9:40 am

**fMRI**

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

8:00 am: **Fusing functional magnetic resonance image and electrophysiological data on face processing using joint independent component analyses**, Xueqian Yang, Xiaojie Zhao, Li Yao, Changming Wang, Beijing Normal Univ. (China) . . . . [8672-23]

8:20 am: **Real-time independent component analysis of fMRI using spatial constraint**, Zhi Wang, Beijing Normal Univ. (China); Hang Zhang, Peking Univ. (China); Xia Wu, Li Yao, Zhiying Long, Beijing Normal Univ. (China) . . . . [8672-24]

8:40 am: **Motor execution and imagery: a comparison of the functional network based on ICA and hierarchical integration**, Mingqi Hui, Hang Zhang, Ruiyang Ge, Li Yao, Zhiying Long, Beijing Normal Univ. (China) . . . . . [8672-25]

9:00 am: **Motor execution and imagination: a comparison of functional connectivity based on connection strength**, Lele Xu, Rushao Zhang, Mingqi Hui, Ruiyang Ge, Zhiying Long, Li Yao, Beijing Normal Univ. (China); Yijun Liu, Hang Zhang, Peking Univ. (China)[8672-26]

9:20 am: **Exploring the relationship between N170's amplitudes and the activation of the picture visual stimuli using general linear model**, Xian Zheng, Xiaojie Zhao, Li Yao, Changming Wang, Beijing Normal Univ. (China) . . . . [8672-27]

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

Conference 8673 continued  
Image Perception, Observer Performance, and Technology Assessment  
Room: Fiesta 1-3

**SESSION 5**  
Room: Fiesta 1-3 . . . Mon 8:00 am to 9:40 am

**Tech Assessment**

Session Chair: **Matthew A. Kupinski**, College of Optical Sciences, The Univ. of Arizona (USA)

8:00 am: **Capacity to identify the depth information with stereoscopic mammography under different display methods**, Takamitsu Morikawa, Yoshie Kodera, Nagoya Univ. School of Medicine (Japan) . . . . . [8673-21]

8:20 am: **Assessment of visual-spatial skills in medical context tasks when using monoscopic and stereoscopic visualization**, Marisol Martinez-Escobar, Bethany Juhnke, Jung Leng Foo, Eliot Winer, Iowa State Univ. (USA) . . . . . [8673-22]

8:40 am: **Effect of image processing on detection of non-calcification cancers in 2D digital mammography imaging**, Lucy M. Warren, The Royal Surrey County Hospital NHS Trust (UK) and Univ. of Surrey (UK); Julie Cooke, Jarvis Breast Screening and Diagnostic Ctr. (UK); Rosalind Given-Wilson, St. George's Healthcare NHS Trust (UK); Matthew G. Wallis, Cambridge Breast Unit (UK) and NIHR Cambridge Biomedical Research Ctr. (UK); Mark Halling-Brown, Alistair Mackenzie, The Royal Surrey County Hospital NHS Trust (UK); Dev P. Chakraborty, Univ. of Pittsburgh (UK); Hilde Bosmans, Univ. Hospitals Leuven (Belgium); David R. Dance, Kenneth C. Young, The Royal Surrey County Hospital NHS Trust (UK) and Univ. of Surrey (UK) . . . . . [8673-23]

9:00 am: **Can technical characteristics predict clinical performance in PET/CT imaging? A correlation study for thyroid cancer diagnosis**, Maria Kallergi, Dimitrios Menychtas, Technological Educational Institute of Athens (Greece); Alexandros Georgakopoulos, Nikoleta Pianou, Marinos Metaxas, Biomedical Research Foundation of the Academy of Athens (Greece); Sofia Chatziioannou, National and Kapodistrian Univ. of Athens, Medical School (Greece) . . . . . [8673-24]

9:20 am: **Enhancing reproducibility of ultrasonic measurements by new users**, Manojit Pramanik, Indian Institute of Science (India); Madhumita Gupta, GE Healthcare (India); Kajoli B. Krishnan, GE Global Research (India) . . . . . [8673-25]

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

Conference 8676 continued  
Digital Pathology  
Room: Fiesta 8-10

**SESSION 2**  
Room: Fiesta 8-10 . . Mon 8:00 am to 9:40 am

**Detection, Segmentation**

Session Chair: **Eric Cosatto**, NEC Labs. America, Inc. (USA)

8:00 am: **Automated gastric cancer diagnosis on H&E-stained sections; large scale training with multiple instance machine learning**, Eric Cosatto, Christopher Malon, Pierre-Francois Laquerre, Hans-Peter Graf, NEC Labs. America, Inc. (USA); Akira Saito, Tomoharu Kiyuna, Atsushi Marugame, Ken'ichi Kamijo, NEC Corp. (Japan) . . . . . [8676-4]

8:20 am: **An automated method for counting cytotoxic T-cells from CD8 stained images of renal biopsies**, M. Khalid Khan Niazi, Anjali A. Satoskar, Tibor Nadasdy, Metin N. Gurcan, The Ohio State Univ. (USA) . . . . . [8676-5]

8:40 am: **Detecting mitotic figures in breast cancer histopathology images**, Mitko Veta, Univ. Medical Ctr. Utrecht (Netherlands); Paul J. van Diest, Univ. Medical Ctr. Utrecht (Netherlands); Josien P. W. Pluim, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [8676-6]

9:00 am: **Novel chromatin texture features for the classification of pap smears**, Babak Ehteshami Bejnordi, Ramin Moshavegh, Chalmers Univ. of Technology (Sweden) and MedTech West, Sahlgrenska Univ. Hospital, Gothenburg (Sweden); K Sujathan, Regional Cancer Ctr. (India); Patrik Malm, Ewert Bengtsson, Ctr. for Image Analysis, Uppsala Univ. (Sweden); Andrew Mehnert, Chalmers Univ. of Technology (Sweden) and MedTech West, Sahlgrenska Univ. Hospital, Gothenburg (Sweden) . . . . . [8676-7]

9:20 am: **Improved quantification of disease progression and treatment monitoring using steady-state tumor-model parameters**, Joyoni Dey, Robert Licho, Univ. of Massachusetts Medical School (USA) . . . . . [8676-8]

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

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 2**  
Room: Fiesta 5 . . . Mon 10:10 am to 12:10 pm

**X-ray Imaging**  
Session Chairs: **Karim S. Karim**, Univ. of Waterloo (Canada); **Hee-Joung Kim**, Yonsei Univ. (Korea, Republic of)

10:10 am: **Design considerations for a new, high resolution micro-angiographic fluoroscope based on a CMOS sensor (MAF-CMOS)**, Brendan Loughran, Toshiba Stroke and Vascular Research Ctr. Univ. at Buffalo (USA); Setlur Nagesh Setlur Nagesh, Vivek Singh, Ciprian N. Ionita, Amit Jain, Daniel R. Bednarek, Toshiba Stroke and Vascular Research Ctr., Univ. at Buffalo (USA); Albert H. Titus, Univ. at Buffalo (USA); Stephen Rudin, Toshiba Stroke and Vascular Research Ctr., Univ. at Buffalo (USA) [8668-4]

10:30 am: **Image performances of multi-resolution technology for dynamic detector**, Fumito Nariyuki, Takaaki Ito, Yoshihiro Okada, FUJIFILM Corp. (Japan) . . . . . [8668-5]

10:50 am: **Design of a 3-dimensional field emission electron source with improved emission current density and cathode life**, Yiming Xu, Dongsong Li, Shanghai Advanced Research Institute (China); Jian Zhang, Shanghai Advanced Research Institute (China) and United Imaging Healthcare (China) and Univ. of North Carolina at Chapel Hill (USA) . . . . . [8668-6]

11:10 am: **A novel sensor for high throughput preclinical radiotracer imaging**, Haris Kudrolli, Harish B. Bhandari, Radiation Monitoring Devices, Inc. (USA); Katherine L. Byrne, Simon R. Cherry, Gregory S. Mitchell, Univ. of California, Davis (USA); Hamid Sabet, Vivek V. Nagarkar, Radiation Monitoring Devices, Inc. (USA) . . . . . [8668-7]

11:30 am: **Performance analysis of several generations of flat-panel x-ray imagers based on polycrystalline silicon TFTs**, Larry E. Antonuk, Youcef El-Mohri, Qihua Zhao, Martin Konieczek, Albert K. Liang, Hao Jiang, Univ. of Michigan (USA); Robert A. Street, Jeng-Ping Lu, Palo Alto Research Center, Inc. (USA) . . . . . [8668-8]

11:50 am: **4D molecular imaging using coded aperture x-ray scatter imaging**, Anuj J. Kapadia, Kalyani Krishnamurthy, Duke Univ. (USA); Pooyan Sahbaee, North Carolina State Univ. (USA); Amarpreet Chawla, Scott Wolter, Kenneth Maccabe, David Brady, Ehsan Samei, Duke Univ. (USA) . . . . . [8668-9]

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

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 6**  
Room: Fiesta 6 . . . Mon 10:10 am to 12:10 pm

**Lung**  
Session Chair: **Josien P. Pluim**, Univ. Medical Ctr. Utrecht (Netherlands)

10:10 am: **Real time motion analysis in 4D medical imaging using conditional density propagation**, Johannes Lotz, Bernd Fischer, Janine Olesch, Matthias Günther, Fraunhofer MEVIS (Germany) . . . . . [8669-28]

10:30 am: **Population based modeling of respiratory lung motion and prediction from partial information**, Dirk Boye, Ctr. for Proton Therapy, Paul Scherrer Institut (Switzerland) and Computer Vision Lab., ETH Zurich (Switzerland); Golnoosh Samei, Computer Vision Lab., ETH Zurich (Switzerland); Johannes Schmidt, Institute for Biomedical Engineering, Univ. and ETH (Switzerland); Gabor Szekely, Christine Tanner, Computer Vision Lab., ETH Zurich (Switzerland) . . . . . [8669-29]

10:50 am: **A derivative of stick filter for pulmonary fissure detection in CT images**, Changyan Xiao, Hunan Univ. (China); Marius Staring, Leids Univ. Medisch Ctr. (Netherlands); Juan Wang, Hunan Univ. (China); Denis P. Shamonin, Berend C. Stoel, Leids Univ. Medisch Ctr. (Netherlands) . . . . . [8669-30]

11:10 am: **Globally optimal lung tumor co-segmentation of 4D CT and PET images**, Junjie Bai, The Univ. of Iowa (USA); Qi Song, GE Global Research (USA); Sudershan Bhatia, The Univ. of Iowa (USA); Xiaodong Wu, The Univ. of Iowa (USA) and The Univ. of Iowa (USA) . . . . . [8669-31]

11:30 am: **Pulmonary lobe segmentation using the thin plate spline (TPS) with the help of the fissure localization areas**, Pauline Steininger, Univ. de Technologie de Compiègne (France) and Siemens Corporate Research (USA); Li Zhang, Siemens Corporate Research (USA); Alexander Mahnke, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Benjamin L. Odry, Atilla P. Kiraly, Sandra Sudarsky, Carol L. Novak, Bernhard Geiger, Shuping Qing, Siemens Corporate Research (USA); Hendrik Ditt, Siemens AG - Healthcare (Germany) . . . . . [8669-32]

11:50 am: **Highly accurate fast lung CT registration**, Jan Ruehaak, Stefan Heldmann, Till Kipshagen, Bernd Fischer, Fraunhofer MEVIS (Germany) . . . . . [8669-33]

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

Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging  
Room: Monterey 1-3

**SESSION 6**  
Room: Monterey 1-3 . . . . . Mon 10:10 am to 12:10 pm

**Keynote and fMRI and Brain Imaging**  
Session Chairs: **John B. Weaver**, Dartmouth Hitchcock Medical Ctr. (USA); **Robert C. Molthen**, Medical College of Wisconsin (USA)

10:10 am: **Characterizing and utilizing fMRI fluctuations, patterns, and dynamics (Keynote Presentation)**, Peter A. Bandettini, National Institutes of Health (USA) . . . . . [8672-28]

11:10 am: **Statistical bias in optimized VBM**, Nicholas J. Tustison, Univ. of Virginia (USA); Brian B. Avants, Philip A. Cook, James C. Gee, Univ. of Pennsylvania (USA); James R. Stone, Univ. of Virginia (USA) . . . . . [8672-29]

11:30 am: **3D of brain shape and volume after cranial vault remodeling surgery for craniosynostosis correction in infants**, Beatriz Paniagua, Omri Emodi, Jonathan Hill, The Univ. of North Carolina at Chapel Hill (USA); James Fishbaugh, The Univ. of Utah (USA); Luiz Pimenta, The Univ. of North Carolina at Chapel Hill (USA); Stephen Aylward, Andinet Enquobahrie, Kitware Inc. (USA); Guido Gerig, The Univ. of Utah (USA); John Gilmore, John van Aalst, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8672-30]

11:50 am: **Altered hemodynamic oscillation of resting-state networks in mesial temporal lobe epilepsy**, Xiaopeng Song, College of Engineering, Peking Univ. (China); Yi Zhang, School of Life Sciences and Technology, Xidian Univ. (China); Hang Zhang, Qijun Xie, College of Engineering, Peking Univ. (China); Haibo Xu, Union Hospital of Huazhong, Univ. of Science and Technology (China); Shuyan Song, Huazhong Univ. of Science and Technology (China); Yijun Liu, College of Engineering, Peking Univ. (China) and Univ. of Florida (USA) . . . . . [8672-31]

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

Conference 8673 continued  
Image Perception, Observer Performance, and Technology Assessment  
Room: Fiesta 1-3

**SESSION 6**  
Room: Fiesta 1-3 . Mon 10:10 am to 12:10 pm

**Observer Performance: Breast**  
Session Chair: **Maciej A. Mazurowski**, Duke Univ. (USA)

10:10 am: **Test set readings predict clinical performance to a limited extent: preliminary findings**, BaoLin Pauline Soh, The Univ. of Sydney (Australia); Warwick B. Lee, BreastScreen NSW (Australia); Peter L. Kench, Warren M. Reed, Mark F. McEntee, Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . [8673-26]

10:30 am: **A comparison of image interpretation times in full field digital mammography and digital breast tomosynthesis**, Susan M. Astley, Sophie J. Connor, The Univ. of Manchester (UK); Yit Yoong Lim, Univ. Hospital of South Manchester (UK); Catriona Tate, The Univ. of Manchester (UK); Helen Entwistle, Univ. Hospital of South Manchester (UK); Julie Morris, Sigrid Whiteside, Jamie Sergeant, The Univ. of Manchester (UK); Mary Wilson, Ursula Beetles, Caroline Boggis, Univ. Hospital of South Manchester (UK); Fiona J. Gilbert, Univ. of Cambridge (UK) . [8673-27]

10:50 am: **Same task, same observers, different values: the problem with visual assessment of breast density**, Jamie Sergeant, Lani Walshaw, The Univ. of Manchester (UK); Mary Wilson, Univ. Hospital of South Manchester (UK); Sita Steed, The Univ. of Manchester (UK); Nicky Barr, Ursula Beetles, Caroline Boggis, Sara Bundred, Soujanya Gadde, Yit Yoong Lim, Sigrid Whiteside, Gareth Evans, Anthony Howell, Univ. Hospital of South Manchester (UK); Susan M. Astley, The Univ. of Manchester (UK) [8673-28]

11:10 am: **The impact of mammographic density and lesion location on detection**, Dana Al Mousa, Elaine Ryan, The Univ. of Sydney (Australia); Warwick B. Lee, BreastScreen NSW (Australia); Carolyn Nickson, The Univ. of Melbourne (Australia); Mariusz W. Pietrzyk, Warren M. Reed, Ann Poulos, Yanpeng Li, Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . [8673-29]

11:30 am: **Does routine breast screening practice over-ride display quality in reporting enriched test sets?**, Alastair G. Gale, Yan Chen, Loughborough Univ. (UK); Michael G. Evanoff, The American Board of Radiology (USA) . . . . . [8673-30]

11:50 am: **Difficulty of mammographic cases in the context of resident training: preliminary experimental data**, Maciej A. Mazurowski, Duke Univ. (USA) . . . . . [8673-31]

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

Conference 8676 continued  
Digital Pathology  
Room: Fiesta 8-10

**SESSION 3**  
Room: Fiesta 8-10 Mon 10:10 am to 12:10 pm

**Registration, Reconstruction, Tracking**  
Session Chair: **James P. Monaco**, Rutgers, The State Univ. of New Jersey (USA)

10:10 am: **3D prostate histology reconstruction: an evaluation of image-based and fiducial-based algorithms**, Eli D. Gibson, Robarts Research Institute (Canada) and Biomedical Engineering Graduate Program, The Univ. of Western Ontario (Canada); Mena Gaed, Robarts Research Institute (Canada) and Lawson Health Research Institute (Canada); José A. Gómez-Lemus, Madeleine Moussa, Cesare Romagnoli, Joseph L. Chin, The Univ. of Western Ontario (Canada); et. al. . . [8676-9]

10:30 am: **Dynamically constrained pipeline for tracking neural progenitor cells**, Jacob S. Vestergaard, Anders L. Dahl, Technical Univ. of Denmark (Denmark); Peter Holm, Faculty of Life Sciences, Copenhagen Univ. (Denmark); Rasmus Larsen, Technical Univ. of Denmark (Denmark) . . . . . [8676-10]

10:50 am: **A statistical deformation model (SDM) based regularizer for non-rigid image registration: application to registration of multimodal prostate MRI and histology**, Srivathsan Babu Prabu, Rutgers, The State Univ. of New Jersey (USA); Robert J. Toth, Rutgers, The State Univ. of New Jersey (USA); Anant Madabhushi, Case Western Reserve Univ. (USA) . . . . . [8676-11]

11:10 am: **Reconstruction of vessel structures from serial whole slide sections of murine liver samples**, Michael Schwier, Horst K. Hahn, Fraunhofer MEVIS (Germany); Uta Dahmen, Olaf Dirsch, Jena Univ. Hospital (Germany) . . . . . [8676-12]

11:30 am: **Registration of whole-mount histology and tomography of the prostate using particle filtering**, Guy Nir, Septimiu E. Salcudean, The Univ. of British Columbia (Canada) . . . . . [8676-13]

11:50 am: **Toward quantitative digital histopathology for prostate cancer: comparison of inter-slide interpolation methods for tumour measurement**, Mehrnough Salarian, Maysam Shahedi, Western Univ. (Canada); Eli D. Gibson, Robarts Research Institute (Canada); Mena Gaed, Jose A. Gómez-Lemus, Madeleine Moussa, Glenn S. Bauman, London Health Sciences Ctr. (Canada); Aaron D. Ward, Western Univ. (Canada) . . . . . [8676-14]

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



Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 3**  
Room: Fiesta 5 . . . . . Mon 1:20 pm to 3:40 pm

**Tomosynthesis**  
Session Chairs: **John M. Sabol**, GE Healthcare (USA); **Anders Tingberg**, Scania Univ. Hospital (Sweden)

1:20 pm: **Effect of denoising on the quality of reconstructed images in digital breast tomosynthesis**, Marcelo A. Vieira, Univ. de São Paulo (Brazil); Predrag R. Bakic, Andrew D. A. Maidment, Univ. of Pennsylvania (USA) . . . . . [8668-10]

1:40 pm: **Comparative studies on exposure conditions and reconstruction algorithms in limited angle tomography**, Kwang Eun Jang, Jiyoung Choi, Jongha Lee, Younghun Sung, Jae Hak Lee, SeongDeok Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8668-11]

2:00 pm: **Evaluation of stationary chest tomosynthesis system using CNT x-ray source array**, Jing Shan, Pavel Chtcheprov, Andrew W. Tucker, Yueh Z. Lee, The Univ. of North Carolina at Chapel Hill (USA); Xiaohui Wang, David Fooks, Michael D. Heath, Carestream Health, Inc. (USA); Jianping Lu, Otto Z. Zhou, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8668-12]

2:20 pm: **Proposing a new velocity profile for continuous x-ray tube motion in digital breast tomosynthesis**, Raymond J. Acciavatti, Predrag R. Bakic, The Univ. of Pennsylvania Health System (USA); Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA) . . . . . [8668-13]

2:40 pm: **Optimization of clinical protocols for contrast enhanced breast imaging**, Yue-Houng Hu, Wei Zhao, Stony Brook Univ. Medical Ctr. (USA) . . . [8668-14]

3:00 pm: **Demonstration of a scatter correction technique in digital breast tomosynthesis**, Christy R. Inscoe, Andrew W. Tucker, Jianping Lu, Otto Z. Zhou, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8668-15]

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 7**  
Room: Fiesta 6 . . . . . Mon 1:20 pm to 3:40 pm

**Registration**  
Session Chair: **Benoit M. Dawant**, Vanderbilt Univ. (USA)

1:20 pm: **Assessing accuracy of non-linear registration in 4D image data using automatically detected landmark correspondences**, René Werner, Univ. Medical Ctr. Hamburg-Eppendorf (Germany); Christine Duscha, Alexander Schmidt-Richberg, Jan Ehrhardt, Heinz Handels, Univ. zu Lübeck (Germany) . . . . . [8669-34]

1:40 pm: **Deformable image registration by multi-objective optimization using a dual-dynamic transformation model to account for large anatomical differences**, Tanja Alderliesten, Jan-Jakob Sonke, Netherlands Cancer Institute (Netherlands); Peter Bosman, Centrum Wiskunde & Informatica (Netherlands) . . . . . [8669-35]

2:00 pm: **Multimodal rigid-body registration of 3D brain images using bilateral symmetry**, Sylvain Prima, INRIA Rennes - Bretagne Atlantique (France); Olivier Commowick, IRISA / INRIA Rennes (France) . . . . . [8669-36]

2:20 pm: **CT colonography: inverse-consistent symmetric registration of prone and supine inner colon surfaces**, Holger R. Roth, Jamie R. McClelland, Marc Modat, Thomas E. Hampshire, Ctr. for Medical Image Computing, Univ. College London (UK); Darren J. Boone, Ctr. for Medical Imaging, Univ. College Hospital (UK); Mingxing Hu, Sebastien Ourselin, Ctr. for Medical Image Computing, Univ. College London (UK); Steve Halligan, Ctr. for Medical Imaging, Univ. College Hospital (UK); David J. Hawkes, Ctr. for Medical Image Computing, Univ. College London (UK) . . . . . [8669-37]

Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging  
Room: Monterey 1-3

**SESSION 7**  
Room: Monterey 1-3 Mon 1:20 pm to 3:40 pm

**Pulmonary Imaging**  
Session Chairs: **Robert C. Molthen**, Medical College of Wisconsin (USA); **Merryn H. Tawhai**, The Univ. of Auckland (New Zealand); **Anne Clough**, Marquette Univ. (USA)

1:20 pm: **Multiscale, multimodal fusion of histological and MRI lung volumes for characterization of airways**, Mirabela Rusu, Haibo Wang, Thea Golden, Andrew Gow, Anant Madabhushi, Rutgers State Univ. of New Jersey (USA) . . . . . [8672-32]

1:40 pm: **Longitudinal assessment of treatment effects on pulmonary ventilation using 1H/3He MRI multivariate templates**, Nicholas J. Tustison, Benjamin Contrella, Talissa A. Altes, Univ. of Virginia (USA); Brian B. Avants, Univ. of Pennsylvania (USA); Eduard E. de Lange, John P. Mugler III, Univ. of Virginia (USA) . . . . . [8672-33]

2:00 pm: **Using CT imaging to quantify differences between young and elderly healthy lungs**, Karthik Subramaniam, Merryn H. Tawhai, Auckland Bioengineering Institute (New Zealand); Eric Hoffman, Univ. of Iowa (USA) [8672-34]

2:20 pm: **Graph-based segmentation of the pediatric trachea in MR images to model growth**, Richard Amendola, Joseph Reinhardt, Univ. of Iowa (USA); Yutaka Sato, Univ. of Iowa (USA) and Univ. of Iowa (USA); Henry Diggelmann, Deborah Kacmarynski, Univ. of Iowa (USA) . . . . . [8672-35]

2:40 pm: **Stochastic tracking of small pulmonary vessels in human lung alveolar walls using synchrotron radiation micro CT images**, Yoshiki Kawata, Noboru Niki, Univ. of Tokushima (Japan); Keiji Umetani, Japan Synchrotron Radiation Research Institute (Japan); Yasutaka Nakano, Shiga Univ. of Medical Science Hospital (Japan); Hironobu Ohamatsu, National Cancer Ctr. Hospital East (Japan); Noriyuki Moriyama, National Cancer Ctr. Research Ctr. for Cancer Prevention and Screening (Japan); Harumi Itoh, Univ. of Fukui (Japan) . . . . . [8672-36]

Conference 8673 continued  
Image Perception, Observer Performance, and Technology Assessment  
Room: Fiesta 1-3

**SESSION 7**  
Room: Fiesta 1-3 . . . Mon 1:20 pm to 3:40 pm

**Observer Performance: General**  
Session Chair: **Federica Zanca**, UZ Leuven (Belgium)

1:20 pm: **Analysis of individual variability and habituation in stereoscopic radiography**, Yasuko Y. Unno, Takao Kuwabara, FUJIFILM Corp. (Japan); Nobutaka Natsui, Kazuo Ishikawa, Tokyo Polytechnic Univ. (Japan) . . . . . [8673-32]

1:40 pm: **Impact of bone suppression imaging improves on the detection of lung nodules in chest radiographs: analysis of multiple reading sessions.**, Steven Schalekamp, Bram van Ginneken, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Cornelia M. Schaefer-Prokop, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) and Meander Medisch Centrum (Netherlands); Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8673-33]

2:00 pm: **A preliminary comparison of different methods for human reader performance estimation**, Francesc Massanes, Jovan G. Brankov, Illinois Institute of Technology (USA) . . . [8673-34]

2:20 pm: **The variation of radiologists' performance over the course of a reading session using test cases**, Sian Taylor-Phillips, Markus Elze, The Univ. of Warwick (UK); Claudia R. Mello-Thoms, Univ. of Pittsburgh (USA); Elizabeth A. Krupinski, The Univ. of Arizona (USA); Alastair G. Gale, Loughborough Univ. (UK); Aileen Clarke, The Univ. of Warwick (UK) . . . . . [8673-35]

2:40 pm: **Investigating the feasibility of using partial least squares as a method of extracting salient information for the evaluation of digital breast tomosynthesis**, George Zhang, U.S. Food and Drug Administration (USA) and Univ. of California, Berkeley (USA); Kyle J. Myers, Subok Park, U.S. Food and Drug Administration (USA) . . . . . [8673-36]

Conference 8676 continued  
Digital Pathology  
Room: Fiesta 8-10

**SESSION 4**  
Room: Fiesta 8-10 . . Mon 1:20 pm to 3:20 pm

**Quality Control, IHC Analysis**  
Session Chair: **Elizabeth A. Krupinski**, The Univ. of Arizona (USA)

1:20 pm: **EM-based segmentation-driven color standardization of digitized histopathology**, Ajay N. Basavanahally, Rutgers, The State Univ. of New Jersey (USA); Anant Madabhushi, Case Western Reserve Univ. (USA) . . . . . [8676-15]

1:40 pm: **Cell cluster graph for prediction of biochemical recurrence in prostate cancer patients from tissue microarrays**, Sahirzeeshan N. Ali, Case Western Reserve Univ. (USA); Robert Veltri, Jonathan A. Epstein, Christhunesa Christudass, The Johns Hopkins Hospital (USA); Anant Madabhushi, Case Western Reserve Univ. (USA) . . . . . [8676-16]

2:00 pm: **Entropy based quantification of Ki-67 positive cell images and its evaluation by a reader study**, M. Khalid Khan Niazi, Michael Pennell, Camille Elkins, Jessica Hemminger, Ming Jin, Sean Kirby, Habibe Kurt, Barrie Miller, Elizabeth Plocharczyk, Rachel Roth, Rebecca Ziegler, Arwa Shana'ah, Fred Racke, Gerard Lozanski, Metin N. Gurcan, The Ohio State Univ. (USA) . . . . . [8676-17]

2:20 pm: **Psycho-visual evaluation of image quality attributes in digital pathology slides viewed on a medical color LCD display**, Ljiljana Platiša, Univ. Gent (Belgium); Leen Van Brantegem, Univ. Gent (Belgium); Yves Vander Haeghen, Ghent Univ. Hospital (Belgium); Cédric Marchessoux, Barco N.V. (Belgium); Ewout Vansteenkiste, Wilfried Philips, Univ. Gent (Belgium) . . . . . [8676-18]

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 3 (CONTINUED)**  
Room: Fiesta 5 . . . . . Mon 1:20 pm to 3:40 pm  
3:20 pm: **Study of image quality in digital breast tomosynthesis by subpixel reconstruction**, Yao Lu, Heang-Ping Chan, Jun Wei, Lubomir M. Hadjiiski, Ravi Samala, Univ. of Michigan Health System (USA) . . . . . [8668-16]  
Coffee Break . . . . . Mon 3:40 pm to 4:00 pm

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 7 (CONTINUED)**  
Room: Fiesta 6 . . . . . Mon 1:20 pm to 3:40 pm  
2:40 pm: **Statistical 3D prostate imaging atlas construction via anatomically constrained registration**, Mirabela Rusu, Rutgers, The State Univ. of New Jersey (USA); B. Nicolas Bloch, C. Carl Jaffe, Boston Univ. School of Medicine (USA); Neil M. Rofsky, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Elizabeth M. Genega, Beth Israel Deaconess Medical Ctr. (USA); Robert E. Lenkinski, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8669-38]  
3:00 pm: **Mouse lung volume reconstruction from efficient groupwise registration of individual histological slices with natural gradient**, Haibo Wang, Mirabela Rusu, Thea Golden, Andrew Gow, Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8669-39]  
3:20 pm: **Surrogate-based diffeomorphic motion estimation for radiation therapy: comparison of multivariate regression approaches**, Matthias Wilms, René Werner, Jan Ehrhardt, Alexander Schmidt-Richberg, Maximilian Blendowski, Heinz Handels, Univ. zu Lübeck (Germany) . . . . . [8669-40]  
Coffee Break. . . . . Mon 3:40 pm to 4:00 pm

Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging  
Room: Monterey 1-3

**SESSION 7 (CONTINUED)**  
Room: Monterey 1-3 Mon 1:20 pm to 3:40 pm  
3:00 pm: **From imaging to functional outcome in pulmonary embolism**, Alys R. Clark, Auckland Bioengineering Institute (New Zealand); Kelly S. Burrowes, Univ. of Oxford (UK); David G. Milne, Margaret L. Wilsher, Auckland City Hospital (New Zealand); Merryn H. Tawhai, Auckland Bioengineering Institute (New Zealand) . . . . . [8672-37]  
3:20 pm: **Strain as a novel index of regional pulmonary function from thoracic 4D CT images: in vivo validation with tomographic SPECT ventilation and perfusion**, Mohammadreza Negahdar, Neal Dunlap, Albert Zacarias, Shiao Y. Woo, Amir A. Amini, A. Cahid Civelek, Univ. of Louisville (USA) . . . . . [8672-38]  
Coffee Break. . . . . Mon 3:40 pm to 4:00 pm

Conference 8673 continued  
Image Perception, Observer Performance, and Technology Assessment  
Room: Fiesta 1-3

**SESSION 7 (CONTINUED)**  
Room: Fiesta 1-3 . . . Mon 1:20 pm to 3:40 pm  
3:00 pm: **Quantitative anatomical labeling of the anterior abdominal wall**, Wade M. Allen, Zhoubing Xu, Andrew J. Asman, Benjamin K. Poulouse, Bennett A. Landman, Vanderbilt Univ. (USA). [8673-37]  
3:20 pm: **Observer performance in semi-automated microbleed detection**, Hugo J. Kuijf, Manon Brundel, Jeroen de Bresser, Max A. Viergever, Geert Jan Biessels, Koen L. Vincken, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [8673-38]  
**Poster Award Announcements**  
Room: Fiesta 1-3 . . . . . Mon. 3:40 to 3:45 pm  
The Image Perception, Observer Performance, and Technology Assessment conference poster award recipients will be recognized and certificates distributed.

Conference 8676 continued  
Digital Pathology  
Room: Fiesta 8-10

**SESSION 4 (CONTINUED)**  
Room: Fiesta 8-10 . . Mon 1:20 pm to 3:20 pm  
2:40 pm: **Comparison study of five different display modalities for whole slide images in histo and cytopathology in Europe**, Nicky D'Haene, Calliope Maris, Erasme Univ. Hospital, Univ. Libre de Bruxelles (Belgium); Rorive Sandrine, Erasme Univ. Hospital, Univ. Libre de Bruxelles (Belgium) and DIAPATH - Ctr. for Microscopy and Molecular Imaging (CMMI) (Belgium); Xavier Moles Lopez, DIAPATH - Ctr. for Microscopy and Molecular Imaging (Belgium) and LIST-LISA, Ecole Polytechnique de Bruxelles, Univ. Libre de Bruxelles (Belgium); Johan Rostang, Cédric Marchessoux, Barco N.V. (Belgium); Liron Pantanowitz, Anil V. Parwani, Univ. of Pittsburgh Medical Ctr. (USA) . . . [8676-19]  
3:00 pm: **Content-based white blood cell retrieval on bright-field pathology images**, Xin Qi, Rebekah H. Gensure, David J. Foran, Univ. of Medicine and Dentistry of New Jersey (USA); Lin Yang, Univ. of Kentucky (USA) . . . . . [8676-20]  
**Poster Award Announcements**  
Room: Fiesta 8-10 . . . . . Mon. 3:20 to 3:25 pm  
The Digital Pathology conference poster award recipients will be recognized and certificates distributed.

**Best Student Paper Award and Plenary Presentation**  
Monday 11 February · 4:00 to 5:00 pm  
Session Chairs: **Nico Karssemeijer**, Radboud Univ. Nijmegen Medical Ctr. (Netherlands)  
**Ehsan Samei**, Duke Univ. (USA)  
Student Paper Award Announcement  
Plenary Presentation: **Critical path technology: volumetric analyses in the interpretation of CT data**  
**Geoffrey D. Rubin**, Duke Univ. Medical Ctr. (USA)

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CONFERENCE 8673 ENDS

CONFERENCE 8676 ENDS

Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 4**  
Room: Fiesta 5 . . . . .Tue 8:00 am to 9:40 am  
**Metrology/Phantoms I**  
Session Chairs: **Kirsten Boedeker**, Toshiba Medical Research Institute USA (USA); **Hilde Bosmans**, UZ Leuven (Belgium)  
8:00 am: **Quantitative analysis of an enlarged area solid state x-ray image intensifier (SSXII) detector based on electron multiplying charge coupled device (EMCCD) technology**, Setlur Nagesh Swetadri Vasan, Prateek Sharma, Vivek Singh, Amit Jain, Ciprian N. Ionita, Toshiba Stroke and Vascular Research Ctr. (USA); Albert H. Titus, Alexander N. Cartwright, Univ. at Buffalo (USA); Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke and Vascular Research Ctr. (USA) . . . . .[8668-17]  
8:20 am: **Intrinsic and total system performance evaluation for a newly developed solid state x-ray image intensifier (SSXII) detector**, Vivek Singh, Setlur Nagesh Swetadri Vasan, Amit Jain, Univ. at Buffalo (USA); Prateek Sharma, State University of New York at Buffalo (USA); Daniel R. Bednarek, Stephen Rudin, Univ. at Buffalo (USA) . . . . .[8668-18]  
8:40 am: **Uncertainty of Monte Carlo variance estimates: application to the simulation of x-ray imaging detectors**, Aldo Badano, Frank W. Samuelson, U.S. Food and Drug Administration (USA) . . . . .[8668-19]  
9:00 am: **Two methods for simulation of dense tissue distribution in software breast phantoms**, Joseph H. Chui, The Univ. of Pennsylvania Health System (USA); Rongping Zeng, U.S. Food and Drug Administration (USA); David D. Pokrajac, Delaware State Univ. (USA); Subok Park, Kyle J. Myers, U.S. Food and Drug Administration (USA); Andrew D. A. Maidment, Predrag R. Bakic, The Univ. of Pennsylvania Health System (USA) . . . . .[8668-20]  
9:20 am: **Synthesis of CT anatomical texture in voxelized XCAT phantoms**, Jason Bond, Anum Minhas, Donald Frush, Duke Univ. Medical Ctr. (USA); Mannudeep K. Kalra, Sarabjeet Singh, Massachusetts General Hospital (USA); William P. Segars, Duke Univ. Medical Ctr. (USA); Ehsan Samei, Duke Univ. Medical Ctr. (USA) and Massachusetts General Hospital (USA) . . . . .[8668-21]  
Coffee Break. . . . .Tue 9:40 am to 10:10 am  
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Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 8**  
Room: Fiesta 6 . . . . .Tue 8:00 am to 9:40 am  
**Segmentation and Localization**  
Session Chair: **Tomaž Vrtovec**, Univ. of Ljubljana (Slovenia)  
8:00 am: **Probabilistic model-based detection and localization of calibration phantoms in CT Images**, Mingna Zheng, Yaorong Ge, Virginia Tech-Wake Forest Univ. School of Biomedical Engineering and Sciences (USA) and Wake Forest Univ. School of Medicine (USA); Jeffrey Carr, Wake Forest Univ. School of Medicine (USA) . . . . .[8669-41]  
8:20 am: **Coarse-to-fine localization of anatomical landmarks in CT images based on multi-scale local appearance and rotation-invariant spatial landmark distribution model**, Mitsutaka Nemoto, Yoshitaka Masutani, Shouhei Hanaoka, Yukihiro Nomura, Takeharu Yoshikawa, Naoto Hayashi, Kuni Ohtomo, The Univ. of Tokyo (Japan) . . . . .[8669-42]  
8:40 am: **Automated anatomical labeling of the cerebral arteries using belief propagation**, Murat Bilgel, Snehashis Roy, Aaron Carass, Paul A. Nyquist, Jerry L. Prince, Johns Hopkins Univ. (USA) .[8669-43]  
9:00 am: **A pattern recognition framework for vessel segmentation in 4D CT of the brain**, Jan-Jurre Mordang, Marcel T. H. Oei, Rieneke van den Boom, Diagnostic Image Analysis Group, Dept. of Radiology, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Ewoud J. Smit, Univ. Medical Ctr. Utrecht (Netherlands); Mathias Prokop, Bram van Ginneken, Rashindra Manniesing, Diagnostic Image Analysis Group, Dept. of Radiology, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . .[8669-44]  
9:20 am: **Hepatic vein segmentation using wavefront propagation and multiscale vessel enhancement**, Klaus Drechsler, Cristina Oyarzun Laura, Stefan Wesarg, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) . . [8669-45]  
**Poster Award Announcements**  
Room: Fiesta 6 . . . . . 9:40 am to 9:45 am  
The poster award recipients will be recognized and certificates distributed.  
Coffee Break. . . . .Tue 9:40 am to 10:10 am  
8669 continues on page 34 ➡

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

**SESSION 1**  
Room: Fiesta 8-10 . . .Tue 8:00 am to 9:40 am  
**Novel/Other CAD Applications**  
Session Chairs: **Carol L. Novak**, Siemens Corporate Research & Technology (USA); **Stephen Aylward**, Kitware, Inc. (USA)  
8:00 am: **Hyperspectral signature analysis of skin parameters**, Saurabh Vyas, Johns Hopkins Univ. Applied Physics Lab. (USA) and Johns Hopkins Univ. (USA); Amit Banerjee, Johns Hopkins Univ. Applied Physics Lab. (USA); Luis Garza, Sewon Kang, Johns Hopkins Univ. (USA); Philippe Burlina, Johns Hopkins Univ. Applied Physics Lab. (USA) and Johns Hopkins Univ. (USA) . . . . .[8670-1]  
8:20 am: **Down syndrome detection from facial photographs using machine learning techniques**, Qian Zhao, Kenneth Rosenbaum, Raymond Sze, Marshall Summer, Marius G. Linguraru, Children's National Medical Ctr. (USA) . . . . .[8670-2]  
8:40 am: **Region detection in medical images using HOG classifiers and a body landmark network**, Marius Erdt, Oliver Knapp, Klaus Drechsler, Stefan Wesarg, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) . . . . [8670-3]  
9:00 am: **Automatic segmentation of kidneys from non-contrast CT images using efficient belief propagation**, Jianfei Liu, National Institutes of Health (USA); Marius G. Linguraru, Children's National Medical Ctr. (USA); Shijun Wang, Ronald M. Summers, National Institutes of Health (USA) . . . . .[8670-4]  
9:20 am: **Robust detection of renal calculi from non-contrast CT images using tv-flow and mser features**, Jianfei Liu, Shijun Wang, National Institutes of Health (USA); Marius G. Linguraru, Children's National Medical Ctr. (USA); Ronald M. Summers, National Institutes of Health (USA) . . . . .[8670-5]  
Coffee Break. . . . .Tue 9:40 am to 10:10 am  
8670 continues on page 34 ➡

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

**SESSION 1**  
Room: Fiesta 1-3 . . . .Tue 8:00 am to 9:40 am  
**Laparoscopy/Endoscopy/ Bronchoscopy**  
Session Chairs: **William E. Higgins**, The Pennsylvania State Univ. (USA); **Kensaku Mori**, Nagoya Univ. (Japan)  
8:00 am: **Technician-free system for image-guided bronchoscopy**, Rahul Khare, The Pennsylvania State Univ. (USA); Rebecca Bascom, Penn State Hershey (USA); William E. Higgins, The Pennsylvania State Univ. (USA) . . . [8671-1]  
8:20 am: **Robust feature tracking for endoscopic pose estimation and structure recovery**, Stefanie Speidel, Karlsruhe Institut für Technologie (Germany); Sebastian Krappe, Fraunhofer-Institut für Integrierte Schaltungen (Germany); Beat-Peter Müller-Stich, Univ. Hospital of Heidelberg (Germany); Rüdiger Dillmann, Karlsruhe Institut für Technologie (Germany) . . . . .[8671-2]  
8:40 am: **Towards designing an optical-flow based colonoscopy tracking algorithm: a comparative study**, Jianfei Liu, National Institutes of Health (USA); Kalpathi R. Subramanian, The Univ. of North Carolina at Charlotte (USA); Terry S. Yoo, National Library of Medicine (USA) . . . . .[8671-73]  
9:00 am: **Image guidance system for flexible endoscopes considering tissue deformation**, Johann B. Hummel, Medizinische Univ. Wien (Austria) and Community Hospital Wilhelminen (Austria); Rainer Hoffmann, Amar Bhatia, Marcus Kaar, Wolfgang Birkfellner, Michael Figl, Medizinische Univ. Wien (Austria) . [8671-4]  
9:20 am: **Endoscopic laser range scanner for minimally invasive, image guided kidney surgery**, Eric M. Friets, Jerry Bieszcza, David B. Kynor, Jesse A. Norris, Brynmor J. Davis, Lindsay V. Allen, Robert Chambers, Jacob A. Wolf, Creare Inc. (USA); Courtenay Glisson, S. Duke Herrell III, Robert L. Galloway, Vanderbilt Univ. (USA) . . . . .[8671-5]  
Coffee Break. . . . .Tue 9:40 am to 10:10 am  
8671 continues on page 34 ➡

Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging  
Room: Monterey 1-3

**SESSION 8**  
Room: Monterey 1-3 Tue 8:00 am to 9:40 am  
**Optical Imaging**  
Session Chairs: **Yu Chen**, Univ. of Maryland, College Park (USA); **Andreas H. Hielscher**, Columbia Univ. (USA)  
8:00 am: **Automated 3D region-based volumetric estimation of optic disc swelling in papilledema using spectral-domain optical coherence tomography**, Jui-Kai Wang, Mohammad Saleh Miri, The Univ. of Iowa (USA); Randy H. Kardon, Mona K. Garvin, The Univ. of Iowa (USA) and Veterans Administration Hospital (USA) . . . . .[8672-39]  
8:20 am: **In vivo detection of near infrared transferrin using FRET tomography imaging in breast cancer cells**, Ken Abe, Albany Medical College (USA); Lingling Zhao, Rensselaer Polytechnic Institute (USA); Vivek Venugopal, Beth Israel Deaconess Medical Ctr., Harvard Medical School (USA); Xavier Intes, Rensselaer Polytechnic Institute (USA); Margarida Barroso, Albany Medical College (USA) . . . . .[8672-40]  
8:40 am: **Evaluation of embolic deflection devices using optical particle tracking**, Ciprian N. Ionita, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke and Vascular Research Ctr. (USA) . . . . .[8672-41]  
9:00 am: **Cryo-Imaging: providing the answer to 'Where did my cells go?'**, David L. Wilson, Patiwet Wuttisarnwattana, Case Western Reserve Univ. (USA); Wouter V. Hof, Athersys, Inc. (USA); Mohammed Qutaish, Case Western Reserve Univ. (USA); Madhusudhana Gargasha, Sasidhar Katari, BiolnVision, Inc. (USA); Zhenghong Lee, Horst Von Recum, Case Western Reserve Univ. (USA); Debashish Roy, BiolnVision, Inc. (USA); Kenneth Cooke, Case Western Reserve Univ. (USA) . . . . .[8672-42]  
9:20 am: **Biodistribution study of nanoparticle encapsulated with photodynamic therapy drugs using hyperspectral imaging**, Luma V. Halig, Dongsheng Wang, Xulei Qin, Emory Univ. (USA); Andrew Y. Wang, Ocean NanoTech (USA); Georgia Z. Chen, Baowei Fei, Emory Univ. (USA) . . . . .[8672-43]  
**Poster Award Announcements**  
Room: Monterey 1-3 . . . 9:40 am to 9:45 am  
The poster award recipients will be recognized and certificates distributed.  
Coffee Break. . . . .Tue 9:40 am to 10:10 am  
8672 continues on page 34 ➡

Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 5**  
Room: Fiesta 5 . . . . Tue 10:10 am to 12:10 pm  
**Photon Counting**

Session Chairs: **Thomas G. Flohr**, Siemens Medical Solutions GmbH (Germany); **Karim S. Karim**, Univ. of Waterloo (Canada)

10:10 am: **Multi-energy performance of a research prototype CT scanner with small-pixel counting detector**, Steffen G. Kappler, Andre Henning, Bernhard Krauss, Friederike Schöck, Karl Stierstorfer, Thomas Weidinger, Thomas G. Flohr, Siemens AG, Healthcare Sector (Germany) . . . . . [8668-22]

10:30 am: **Quantitative breast imaging using photon counting detector**, Seokmin Han, Dong-Goo Kang, Sunghoon Kang, Samsung Advanced Institute of Technology (Korea, Republic of); Younghun Sung, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8668-23]

10:50 am: **Measurements of a dual-energy fast photon counting CdTe detector with integrated charge sharing correction**, Christer Ullberg, Mattias Urech, Niclas Weber, Anders Engman, Anna Redz, Fredrik Henckel, XCounter AB (Sweden) . . . . [8668-24]

11:10 am: **Threshold optimization for CNR-enhanced CT images with photon-counting detectors**, Thomas Weidinger, Thorsten M. Buzug, Univ. zu Lübeck (Germany); Thomas G. Flohr, Steffen G. Kappler, Friederike Schöck, Karl Stierstorfer, Siemens Healthcare (Germany) . . . . [8668-25]

11:30 am: **Modeling photon-counting detectors for x-ray CT: spectral response and pulse-pileup effects and evaluation using real data**, Jochen Cammin, Jennifer Xu, Johns Hopkins Univ. (USA); William C. Barber, Jan S. Iwanczyk, Neil E. Hartsough, DxRay, Inc. (USA); Katsuyuki Taguchi, Johns Hopkins Univ. (USA) . . . . . [8668-26]

11:50 am: **Spatial resolution in single-photon-counting x-ray imaging**, Jesse Tanguay, Robarts Research Institute (Canada); Seungman Yun, Pusan National Univ. (Korea, Republic of); Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . [8668-27]

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

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 9**  
Room: Fiesta 6 . . . . .  
Tue 10:10 am to 12:10 pm  
**Keynote and 2D-3D Registration**

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

10:10 am: **Biomedical imaging in personalized medicine** (*Keynote Presentation*), Dorin Comaniciu, Siemens Corporate Research (USA) . . [8669-46]

11:10 am: **A flexible toolkit for rapid GPU-based generation of DRRs for 2D-3D registration**, Grant Marchelli, Univ. of Washington (USA); David R. Haynor, Univ. of Washington (USA); Richard Tsai, William R. Ledoux, U.S. Dept. of Veterans Affairs (USA); Duane W. Storti, Univ. of Washington (USA) . . . . . [8669-47]

11:30 am: **Breast compression simulation using ICP-based B-spline deformation for correspondence analysis in mammography and MRI datasets**, Julia Krüger, Jan Ehrhardt, Institute of Medical Informatics, Univ. of Lübeck (Germany); Arpad Bischof, Univ. Medical Ctr. Schleswig-Holstein (Germany); Heinz Handels, Institute of Medical Informatics, Univ. of Lübeck (Germany) . . . . . [8669-48]

11:50 am: **Semi-automatic registration of 3D orthodontics models from photographs**, Raphaël Destrez, UsefulProgress (France) and PRISME Lab. Univ. Orléans (France); Sylvie Treuillet, Yves Lucas, PRISME Lab. Univ. Orléans (France); Benjamin Albouy-Kissi, Univ. d'Auvergne Clermont-Ferrand I (France) . . . . . [8669-49]

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

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

**SESSION 2**  
Room: Fiesta 8-10 Tue 10:10 am to 12:10 pm  
**Musculoskeletal CAD**

Session Chairs: **Axel Wismueller**, Univ. of Rochester Medical Ctr. (USA); **Kenji Suzuki**, The Univ. of Chicago (USA)

10:10 am: **Preliminary results of automated removal of degenerative joint disease in bone scan lesion segmentation**, Gregory H. Chu, Pechin Lo, Martin Auerbach, Jonathan G. Goldin, Univ. of California, Los Angeles (USA); Keith Henkel, MedQIA (USA); Ashley Banola, Univ. of California, Los Angeles (USA); Darren Morris, MedQIA (USA); Heidi Coy, Matthew S. Brown, Univ. of California, Los Angeles (USA) . . . . . [8670-6]

10:30 am: **Segmenting the thoracic, abdominal and pelvic musculature on CT scans combining atlas-based model and active contour model**, Weidong Zhang, Jiamin Liu, Jianhua Yao, Ronald M. Summers, National Institutes of Health (USA) . . . . . [8670-7]

10:50 am: **Automated measurement of diagnostic angles for hip dysplasia**, Sepp de Raedt, Inger Mechlenburg, Maiken Stilling, Lone Romer, Kjeld Soballe, Aarhus Univ. Hospital (Denmark); Marleen de Bruijne, Erasmus MC (Netherlands) and Univ. of Copenhagen (Denmark) . . [8670-8]

11:10 am: **Support vector machine classification supported by cross-correlation applied to bone age assessment**, Markus Harmsen, Thomas M. Deserno, Benedikt Fischer, RWTH Aachen (Germany); Hauke Schramm, Fachhochschule Kiel (Germany); Thomas Seidl, RWTH Aachen (Germany) . . [8670-9]

11:30 am: **Cortical thickness estimation of the proximal femur from multi-view dual-energy X-ray absorptiometry (DXA)**, Nikolaos Tsaousis, Andrew H. Gee, Graham M. Treece, Univ. of Cambridge (UK); Kenneth E. Poole, Univ. of Cambridge (UK) . . [8670-10]

11:50 am: **Detection of vertebral degenerative disc disease based on cortical shell unwrapping**, Hector E. Muñoz, Jianhua Yao, National Institutes of Health (USA); Joseph E. Burns, Univ. of California, Irvine (USA); Ronald M. Summers, National Institutes of Health (USA) . . . . . [8670-11]

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

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

**SESSION 2**  
Room: Fiesta 1-3 . . Tue 10:10 am to 12:10 pm  
**Abdominal Procedures**

]Session Chairs: **Baowei Fei**, Emory Univ. (USA); **Ivo Wolf**, Deutsches Krebsforschungszentrum (Germany)

10:10 am: **Evaluation of non-rigid constrained CT/CBCT registration algorithms for delineation propagation in the context of prostate cancer radiotherapy**, Mathieu Rubeaux, Antoine Simon, Univ. de Rennes 1, LTSI (France) and INSERM UMR (France); Khemara Gnep, Jérémy Colliaux, Ctr. Eugène Marquis (France); Oscar Acosta, Univ. de Rennes 1, LTSI (France) and INSERM UMR (France); Renaud De Crevoisier, Univ. de Rennes 1, LTSI (France) and NSERM UMR (France) and Ctr. Eugène Marquis (France); Pascal Haigron, Univ. de Rennes 1, LTSI (France) and INSERM UMR (France) . . [8671-6]

10:30 am: **Refinement and expansion of matched vessel graphs for intraoperative deformable registration of CT and ultrasound**, Matthias Keil, Alexander Kaiser, Cristina Oyarzun Laura, Stefan Wesarg, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) . . . . . [8671-7]

10:50 am: **Fast radioactive seed localization in intraoperative cone beam CT for low-dose-rate prostate brachytherapy**, Yu C. Hu, Jian-Ping Xiong, Gilad Cohen, Marco Zaider, Gikas Mageras, Michael Zelefsky, Memorial Sloan Kettering Cancer Ctr. (USA) . . . . . [8671-8]

11:10 am: **An intraoperative dynamic dosimetry guidance system for prostate brachytherapy**, Nathanael Kuo, Johns Hopkins Univ. (USA); Ehsan Dehgan, Philips Research North America (USA); Anton Deguet, Danny Y. Song, Jerry L. Prince, Junghoon Lee, Johns Hopkins Univ. (USA) . . . . . [8671-9]

11:30 am: **Fully automated prostate magnetic resonance imaging and transrectal ultrasound fusion via a probabilistic registration metric**, Rachel E. Sparks, Rutgers, The State Univ. of New Jersey (USA); Ernest Feleppa, Riverside Research Institute (USA); B. Nicolas Bloch, Boston Medical Ctr. (USA); Dean Barratt, Univ. College London (UK); Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8671-10]

11:50 am: **Nonrigid liver registration for image-guided surgery using partial surface data: a novel iterative approach**, Daniel C. Rucker, Yifei Wu, Janet E. Ondrake, Thomas S. Pheiffer, Amber L. Simpson, Michael I. Miga, Vanderbilt Univ. (USA) . . . . . [8671-11]

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

Conference 8672 continued  
Biomedical Applications in Molecular, Structural, and Functional Imaging  
Room: Monterey 1-3

**SESSION 9**  
Room: Monterey 1-3 Tue 10:10 am to 2:10 pm  
**Nanoparticle Imaging and Sensing**

Session Chairs: **John B. Weaver**, Dartmouth Hitchcock Medical Ctr. (USA); **Thorsten M. Buzug**, Univ. zu Lübeck (Germany)

10:10 am: **Single-sided magnetic particle imaging: magnetic field and gradient**, Ksenija Gräfe, Mandy Grüttner, Timo F. Sattel, Matthias Graeser, Thorsten M. Buzug, Univ. zu Lübeck (Germany) . . . . . [8672-44]

10:30 am: **System matrices for field of view patches in magnetic particle imaging**, Mandy Grüttner, Timo F. Sattel, Florian Griese, Thorsten M. Buzug, Univ. zu Lübeck (Germany) . . . . . [8672-45]

10:50 am: **Scanner setup and reconstruction for three-dimensional magnetic particle imaging**, Thilo Wawrzik, Christian Kuhlmann, Frank Ludwig, Meinhard Schilling, Technische Univ. Braunschweig (Germany) . . [8672-46]

11:10 am: **Langevin equation simulation of Brownian magnetic nanoparticles with experimental and model comparisons**, Daniel B. Reeves, Dartmouth College (USA); Jurgen Weizenecker, Karlsruhe Institute of Technology (Germany); John B. Weaver, Dartmouth College (USA) . . . . . [8672-47]

11:30 am: **Magnetic red blood cells as new contrast agents for MRI applications**, Antonella Antonelli, Carla Sfara, Univ. degli studi de Urbino Carlo Bo (Italy); Elisabetta Manuali, Sonia Salamida, Lab. of Histopathology and Clinical Chemistry (Italy) and Experimental Zooprofilactic Institute of Umbria and Marche (Italy); Gaelle Louin, Guerbet Research Group (France); Mauro Magnani, Univ. degli studi de Urbino Carlo Bo (Italy) . . . . . [8672-48]

11:50 am: **Interstitial detection of gold nanoparticles in deep tissues with optical radiance using porcine phantom**, Serge Grabtchak, Univ. of Prince Edward Island (Canada); Elena Tonkopi, QEII Health Sciences Ctr. (Canada) and Dalhousie Univ. (Canada); William M. Whelan, Univ. of Prince Edward Island (Canada) . . . . . [8672-49]

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

Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 6**  
Room: Fiesta 5 . . . . . Tue 1:20 pm to 3:00 pm  
**Tomosynthesis Reconstruction**  
Session Chairs: **Stephen J. Glick**, Univ. of Massachusetts Medical School (USA); **Iacovos S. Kyrianiou**, U.S. Food and Drug Administration (USA)  
1:20 pm: **Dual energy iodine contrast imaging with mammography and tomosynthesis**, Baorui Ren, Chris Ruth, Yiheng Zhang, Andrew Smith, Don Kennedy, Bernadette O'Keefe, Ian Shaw, Cornell Williams, Zhen Ye, Zhenxue Jing, Hologic, Inc. (USA) . . . . . [8668-28]  
1:40 pm: **An application of pre-computing based penalized-likelihood image reconstruction on stationary digital breast tomosynthesis**, Shiyu Xu, Southern Illinois Univ. Carbondale (USA); Jianping Lu, Otto Z. Zhou, The Univ. of North Carolina Chapel Hill (USA); Ying Chen, Southern Illinois Univ. Carbondale (USA) . . . . . [8668-29]  
2:00 pm: **Efficient synthesis of virtual projections from a tomosynthesis data set using a 2D image processing method**, Frank Dennerlein, Anna Jerebko, Andreas Fieselmann, Thomas Mertelmeier, Siemens AG (Germany) . . . . . [8668-30]  
2:20 pm: **Towards visual-search model observers for mass detection in breast tomosynthesis**, Howard C. Gifford, Mini Das, Univ. of Houston (USA) . . . . . [8668-31]  
2:40 pm: **Simulation of 3D DLA masses in digital breast tomosynthesis**, Alaleh Rashidnasab, Premkumar Elangovan, Univ. of Surrey (UK); Alistair Mackenzie, National Coordinating Ctr. for the Physics of Mammography (UK); Oliver Diaz, Univ. of Surrey (UK); Kenneth C. Young, David R. Dance, National Coordinating Ctr. for the Physics of Mammography (UK); Kevin Wells, Univ. of Surrey (UK) . . . . . [8668-32]  
Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 10**  
Room: Fiesta 6 . . . . . Tue 1:20 pm to 3:00 pm  
**Statistics of Images and Structures**  
Session Chair: **Murray H. Loew**, The George Washington Univ. (USA)  
1:20 pm: **Bias correction of maximum likelihood estimation in quantitative MRI**, Dirk H. Poot, Gyula Kotek, Erasmus MC (Netherlands); Wiro J. Niessen, Erasmus MC (Netherlands) and Delft Univ. of Technology (Netherlands); Stefan Klein, Erasmus MC (Netherlands) . . . . . [8669-50]  
1:40 pm: **Near-lossless compression of computed tomography images using predictive coding with distortion optimization**, Andreas Weinlich, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and Siemens AG (Germany); Peter Amon, Andreas Hutter, Siemens AG (Germany); André Kaup, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8669-51]  
2:00 pm: **Tumor segmentation in brain MRI by sparse optimization**, Shandong Wu, The Univ. of Pennsylvania Health System (USA); David J. Rippe, Florida Hospital Zephyrhills (USA); Nicholas G. Avgeropoulos, M.D. Anderson Cancer Ctr. Orlando (USA); Mubarak Ali Shah, Univ. of Central Florida (USA) . . . . . [8669-52]  
2:20 pm: **Three-dimensional synthetic blood vessel generation using stochastic L-systems**, Miguel A. Galarreta-Valverde, Maysa M. G. Macedo, Univ. de São Paulo (Brazil); Choukri Mekkaoui, Harvard Medical School - MGH, Athinoula A. Martinos Ctr. for Biomedical Imaging (USA); Marcel P. Jackowski, Univ. of São Paulo (Brazil) . . . . . [8669-53]  
2:40 pm: **Longitudinal intensity normalization of magnetic resonance images using patches**, Snehashis Roy, Aaron Carass, Jerry L. Prince, Johns Hopkins Univ. (USA) . . . . . [8669-54]  
Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

**SESSION 3**  
Room: Fiesta 8-10 . . Tue 1:20 pm to 3:00 pm  
**Lung CAD I**  
Session Chairs: **Kensaku Mori**, Nagoya Univ. (Japan); **Matthew S. Brown**, Univ. of California, Los Angeles (USA)  
1:20 pm: **Comparison of demons deformable registration-based methods for texture analysis of serial thoracic CT scans**, Alexandra R. Cunliffe, Hania A. Al-Hallaq, The Univ. of Chicago Medical Ctr. (USA); Xianhan M. Fei, Univ. of Chicago Medical Ctr. (USA); Rachel E. Tuohy, Samuel G. Armato III, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8670-12]  
1:40 pm: **Normalization of CT scans reconstructed with different kernels reducing variability in emphysema measurements**, Leticia Gallardo Estrella, Bram van Ginneken, Eva M. van Rikxoort, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8670-13]  
2:00 pm: **Pulmonary emphysema classification based on an improved texture learning model by sparse representation**, Min Zhang, Xiangrong Zhou, Gifu Univ. School of Medicine (Japan); Satoshi Goshima, Gifu Univ. Hospital (Japan); Chisako Muramatsu, Huayue Chen, Takeshi Hara, Gifu Univ. School of Medicine (Japan); Ryujiro Yokoyama, Masayuki Kanematsu, Gifu Univ. Hospital (Japan); Hiroshi Fujita, Gifu Univ. School of Medicine (Japan) . [8670-14]  
2:20 pm: **Normalization of chest radiographs**, Rick Philipsen, Pragnya Maduskar, Laurens E. Hogeweg, Bram van Ginneken, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8670-15]  
2:40 pm: **Improved texture analysis for automatic detection of tuberculosis (TB) on chest radiographs with bone suppression images**, Pragnya Maduskar, Laurens E. Hogeweg, Rick Philipsen, Steven Schalekamp, Bram van Ginneken, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8670-16]  
Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

**SESSION 3**  
Room: Fiesta 1-3 . . . Tue 1:20 pm to 3:00 pm  
**Cardiothoracic and Radiotherapy Procedures**  
Session Chair: **Terry Peters**, Robarts Research Institute (Canada)  
1:20 pm: **Cryo-balloon catheter localization in fluoroscopic images**, Tanja Kurzendorfer, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Alexander Brost, Stanford Univ. (USA); Carolin Jakob, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Philip W. Mewes, Siemens AG (Germany); Felix Bourier, Krankenhaus Barmherzige Brueder (Germany) and Stanford Univ. (USA); Martin W. Koch, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Klaus Kurzdin, Krankenhaus Barmherzige Brueder (Germany); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Norbert Strobel, Siemens AG (Germany) . . . [8671-12]  
1:40 pm: **Respiratory motion influence on catheter contact force during radio frequency ablation procedures**, Martin W. Koch, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Alexander Brost, Stanford Univ. (USA); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Norbert Strobel, Siemens AG (Germany) . [8671-13]  
2:00 pm: **Image-based modeling and characterization of radiofrequency ablation lesions in left atrial fibrillation therapy**, Cristian A. Linte, Jon J. Camp, Maryam E. Rettmann, David R. Holmes III, Richard A. Robb, Mayo Clinic College of Medicine (USA) . . . . . [8671-14]  
2:20 pm: **Validation of 3D surface imaging in breath-hold radiotherapy for breast cancer: one central camera unit versus three camera units**, Tanja Alderliesten, Anja Betgen, Corine van Vliet-Vroegindewij, Peter Remeijer, The Netherlands Cancer Institute (Netherlands) . . . . . [8671-15]  
2:40 pm: **3D surface imaging for guidance in breast cancer radiotherapy: organs at risk**, Tanja Alderliesten, Anja Betgen, Corine van Vliet-Vroegindewij, Peter Remeijer, The Netherlands Cancer Institute (Netherlands) . . . . . [8671-16]  
Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

Joint Session with Conferences 8672 and 8675  
Continued  
Room: Monterey 1-3

**SESSION 10**      **SESSION 1**  
Room: Monterey 1-3    Tue 1:20 pm to 3:00 pm  
**Elastography Methods**  
Session Chairs: **John B. Weaver**, Dartmouth Hitchcock Medical Ctr. (USA); **Marvin M. Doyle**, Univ. of Rochester (USA)  
1:20 pm: **A consistent pre-clinical/clinical elastography approach for assessing tumor mechanical properties in therapeutic systems**, Jared A. Weis, Thomas E. Yankeelov, Samantha A. Munoz, Vanderbilt Univ. (USA); Rahul A. Sastry, Stanford Univ. (USA); Stephanie L. Barnes, Lori R. Arlinghaus, Xia Li, Michael I. Miga, Vanderbilt Univ. (USA) . . . . . [8672-50]  
1:40 pm: **A mechanically coupled reaction diffusion model of breast tumor response during neoadjuvant chemotherapy**, Jared A. Weis, Michael I. Miga, Xia Li, Lori R. Arlinghaus, A. Bapsi Chakravarthy, Vandana Abramson, Richard G. Abramson, Jaime Farley, Thomas E. Yankeelov, Vanderbilt Univ. (USA) . . . . [8672-51]  
2:00 pm: **Supplying a-priori spatial information using soft prior regularization in non-linear inversion MR elastography**, Matthew D. McGarry, Adam J. Pattison, Dartmouth College (USA); Elijah Van Houten, Univ. of Sherbrooke (Canada); John B. Weaver, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Dartmouth College (USA) . . . . . [8672-52]  
2:20 pm: **Stable automated segmentation of liver MR elastography images for clinical stiffness measurement**, Bogdan Dzyubak, Sudhakar Venkatesh, Kevin Glaser, Meng Yin, Jayant Talwalkar, Jun Chen, Armando Manduca, Richard L. Ehman, Mayo Clinic (USA) . . . . . [8672-53]  
2:40 pm: **Characterizing healthy and osteoarthritic knee cartilage on phase contrast CT with geometric texture features**, Mahesh B. Nagarajan, Univ. of Rochester Medical Ctr. (USA); Paola Coan, Ludwig-Maximilians-Univ. München (Germany) and European Synchrotron Radiation Facility (France); Markus B. Huber, Univ. of Rochester Medical Ctr. (USA); Paul C. Diemoz, European Synchrotron Radiation Facility (France); Christian Glaser, Ludwig-Maximilians-Univ. München (Germany); Axel Wismueller, Univ. of Rochester Medical Ctr. (USA) . . . . . [8672-54]  
Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 7**  
Room: Fiesta 5 . . . . . Tue 3:30 pm to 4:50 pm

**Phase Contrast I**

Session Chairs: **Guang-Hong Chen**, Univ. of Wisconsin School of Medicine and Public Health (USA); **Jeffrey H. Siewerdsen**, Johns Hopkins Univ. (USA)

3:30 pm: **Reconstruction method incorporating the object-position dependence of visibility loss in dark-field imaging**, Udo van Stevendaal, Philips Technologie GmbH (Germany); Zhentian Wang, Paul Scherrer Institut (Switzerland); Thomas Koehler, Gerhard Martens, Philips Technologie GmbH (Germany); Marco Stampanoni, Paul Scherrer Institut (Switzerland) and Institute for Biomedical Engineering, Univ. and ETH Zurich (Switzerland); Ewald Roessl, Philips Technologie GmbH (Germany) . . . . . [8668-33]

3:50 pm: **Grating-based darkfield breast imaging**, Jens Rieger, Florian Bayer, Jürgen Durst, Karl C. Gödel, Wilhelm Haas, Florian Horn, Thilo Michel, Georg Pelzer, André Ritter, Thomas Weber, Andrea Zang, Gisela Anton, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8668-34]

4:10 pm: **How to determine detection performance of a DPC-CT system from a conventional cone beam CT system?**, Ke Li, Univ. of Wisconsin School of Medicine and Public Health (USA); Nicholas B. Bevins, Univ. of Wisconsin-Madison (USA); Joseph N. Zambelli, Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-35]

4:30 pm: **Edge illumination and coded-aperture X-ray phase-contrast imaging: increased sensitivity at synchrotrons and lab-based translations into medicine, biology and materials science**, Paul C. Diemoz, Marco Endrizzi, Magdalena B. Szafraniec, Charlotte K. Hagen, Thomas P. Millard, Cesar E. Zapata, Peter R. T. Munro, Konstantin Ignatyev, Robert D. Speller, Alessandro Olivo, Univ. College London (UK) . . . . . [8668-36]

**WORKSHOP**  
**Phase Contrast X-ray Imaging**  
Room: Fiesta 5 · Tues. 5:00 to 7:00 pm  
**Norbert Pelc**, Stanford Univ. (USA)  
*See Special Events for additional information.*

Conference 8669 continued  
Image Processing  
Rooms: Fiesta 6

**SESSION 11**  
Room: Fiesta 6 . . . . . Tue 3:30 pm to 4:50 pm

**Label Fusion**

Session Chair: **Baowei Fei**, Emory Univ. (USA)

3:30 pm: **Automatic neonatal brain tissue segmentation with MRI**, Vedran Srhoj-Egekher, Univ. of Zagreb (Croatia); Manon J. N. L. Benders, Wilhelmina Children's Hospital, Univ. Medical Ctr. Utrecht (Netherlands); Max A. Viergever, Ivana Isgum, Image Sciences Institute, Univ. Medical Center Utrecht (Netherlands) . . . . . [8669-55]

3:50 pm: **Robust non-local multi-atlas segmentation of the optic nerve**, Andrew J. Asman, Michael P. DeLisi, Louise A. Mawn, Robert L. Galloway, Bennett A. Landman, Vanderbilt Univ. (USA) . [8669-56]

4:10 pm: **Improving whole-brain segmentations through incorporating regional image intensity statistics**, Christian Ledig, Imperial College London (UK); Rolf A. Heckemann, Fondation Neurodis (France); Alexander Hammers, The Neurodis Foundation (France); Daniel Rueckert, Imperial College London (UK) . . . . . [8669-57]

4:30 pm: **Patch-based label fusion using local confidence-measures and weak segmentations**, Andre Mastmeyer, Dirk Fortmeier, Ehsan Maghsoudi, Institute of Medical Informatics, Univ. of Luebeck (Germany); Martin Simon, Clinic for Radiology and Nuclear Medicine, Univ. Medical Ctr. Schleswig-Holstein (Germany); Heinz Handels, Institute of Medical Informatics, Univ. of Luebeck (Germany) . . . . . [8669-58]

**WORKSHOP**  
**When Computer Vision Meets Medical Imaging**  
Room: Fiesta 6 · Tues. 5:00 to 7:00 pm  
*See Special Events for additional information.*

CONFERENCE 8669 ENDS

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

**SESSION 4**  
Room: Fiesta 8-10 . . Tue 3:30 pm to 4:50 pm

**Lung CAD II**

Session Chairs: **Eva M. van Rikxoort**, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); **Samuel G. Armato III**, The Univ. of Chicago Medical Ctr. (USA)

3:30 pm: **A method for automatic matching of multi-timepoint findings for enhanced clinical workflow**, Lakshminarasimhan Raghupathi, Dinesh M. Siddu, Pandu R. Devarakota, Siemens Information Systems Ltd. (India); Gerardo Hermosillo Valadez, Matthias Wolf, Siemens Medical Solutions USA, Inc. (USA) . . . . . [8670-17]

3:50 pm: **Tracking time interval changes of pulmonary nodules on follow-up 3D CT images via image-based risk score of lung cancer**, Yoshiaki Kawata, Noboru Niki, Univ. of Tokushima (Japan); Hironobu Ohamatsu, Masahiro Kusumoto, Takaaki Tsuchida, National Cancer Ctr. Hospital East (Japan); Kenji Eguchi, Teikyo Univ. (Japan); Masahiro Kaneko., Tokyo Health Service Association (Japan); Noriyuki Moriyama, National Cancer Ctr. (Japan) . . . . . [8670-18]

4:10 pm: **Measurement of spiculation index in 3D for solitary pulmonary nodules in volumetric lung CT images**, Ashis K. Dhara, Sudipta Mukhopadhyay, Indian Institute of Technology Kharagpur (India); Niranjan Khandelwal, Postgraduate Institute of Medical Education & Research (India) . . . . . [8670-19]

4:30 pm: **Robust airway extraction based on machine learning and minimum spanning tree**, Tsutomu Inoue, Yoshiro Kitamura, Yuanzhong Li, Wataru Ito, FUJIFILM Corp. (Japan) . . . . . [8670-20]

**WORKSHOP**  
**Live Demonstrations**  
Room: Veracruz C · Tues. 5:00 to 7:00 pm  
**Stephen Aylward**, Kitware, Inc. (USA),  
**Heang-Ping Chan**, Univ. of Michigan Health System (USA)  
*See Special Events for additional information.*

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Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

**SESSION 4**  
Room: Fiesta 1-3 . . . . Tue 3:30 pm to 4:50 pm

**Head and Neck Procedures**

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

3:30 pm: **Robot-assisted intracranial hemorrhage evacuation: an experimental evaluation**, Jessica Burgner, Philip J. Swaney, Ray A. Lathrop, Vanderbilt Univ. (USA); Kyle D. Weaver, Vanderbilt Univ. Medical Ctr. (USA); Robert J. Webster III, Vanderbilt Univ. (USA) . . . . . [8671-17]

3:50 pm: **Automatic segmentation of intra-cochlear anatomy in post-implantation CT**, Fitsum A. Reda, Benoit M. Dawant, Vanderbilt Univ. (USA); Robert F. Labadie, Vanderbilt Univ. Medical Ctr. (USA); Jack H. Noble, Vanderbilt Univ. (USA) . . . . . [8671-18]

4:10 pm: **Deformable registration for cone-beam CT guidance of robot-assisted, trans-oral base-of-tongue surgery**, Sureerat Reaangamornrat, Wen P. Liu, Sebastian Schafer, Yoshito Otake, Sajendra Nithiananthan, Ali Uneri, Jeremy Richmon, Johns Hopkins Univ. (USA); Jonathon Sorger, Intuitive Surgical Inc. (USA); Jeffrey H. Siewerdsen, Russell H. Taylor, Johns Hopkins Univ. (USA) [8671-19]

4:30 pm: **Simulation of retraction for brain deformation compensation in image-guided neurosurgery**, Xiaoyao Fan, Songbai Ji, Dartmouth College (USA); Alex Hartov, Dartmouth College (USA) and Dartmouth Hitchcock Medical Ctr. (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA) and Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Dartmouth College (USA) and Dartmouth Hitchcock Medical Ctr. (USA) . . . . . [8671-20]

**WORKSHOP**  
**The Image-Guided Surgery Toolkit (IGSTK) a Resource for Researchers, Entrepreneurs, and Educators**  
Room: Fiesta 1-3 · Tues. 5:00 to 7:00 pm  
**Ziv R. Yaniv**, Children's National Medical Ctr. (USA)  
*See Special Events for additional information.*

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Joint Session with Conferences 8672 and 8675 Continued  
Room: Monterey 1-3

**SESSION 11**      **SESSION 2**  
Room: Monterey 1-3    Tue 3:30 pm to 4:50 pm

**Elastography: MSK Applications**

Session Chairs: **Armando Manduca**, Mayo Clinic College of Medicine (USA); **Marvin M. Doyle**, Univ. of Rochester (USA)

3:30 pm: **Predicting the biomechanical strength of proximal femur specimens through high dimensional geometric features and support vector regression**, Chien-Chun Yang, Markus B. Huber, Univ. of Rochester Medical Ctr. (USA) and Univ. of Rochester (USA); Mahesh B. Nagarajan, Univ. of Rochester Medical Ctr. (USA); Julio Carballido-Gamio, Univ. of California, San Francisco (USA); Jan S. Bauer, Thomas Baum, Institut Für Röntgendiagnostik, Technische Univ. München (Germany); Felix Eckstein, Eva Lochmüller, Institute of Anatomy and Musculoskeletal Research (Austria); Sharmila Majumdar, Thomas M. Link, Univ. of California, San Francisco (USA); Axel Wismüller, Univ. of Rochester Medical Ctr (USA) and Univ. of Munich (Germany) . . . . . [8672-55]

3:50 pm: **Cortical bone microstructure in human osteogenesis imperfecta (OI) assessed by synchrotron radiation**, John R. Jameson, Marquette Univ. (USA) and Advanced Light Source, Lawrence Berkeley National Lab. (USA) and Orthopaedic & Rehabilitation Engineering Ctr. (USA); Carolyne Albert, Marquette Univ. (USA) and Orthopaedic & Rehabilitation Engineering Ctr. (USA) and Shriners Hospitals for Children (USA); Peter Smith, Orthopaedic & Rehabilitation Engineering Ctr. (USA) and Shriners Hospitals for Children (USA); Gerald Harris, Marquette Univ. (USA) and Orthopaedic & Rehabilitation Engineering Ctr. (USA) and Shriners Hospitals for Children (USA) . . . . . [8672-56]

4:10 pm: **Assessment and characterization of in situ rotator cuff biomechanics**, Erika A. Trent, Clemson Univ. (USA); Lane Bailey, Proaxis Therapy (USA) and Univ. of South Carolina (USA); Fuad N. Mefleh, Vipul Raikar, Clemson Univ. (USA); Ellen Shanley, Charles A. Thigpen, Proaxis Therapy (USA); Delphine E. Dean, David M. Kwartowitz, Clemson Univ. (USA) . . . . . [8672-57]

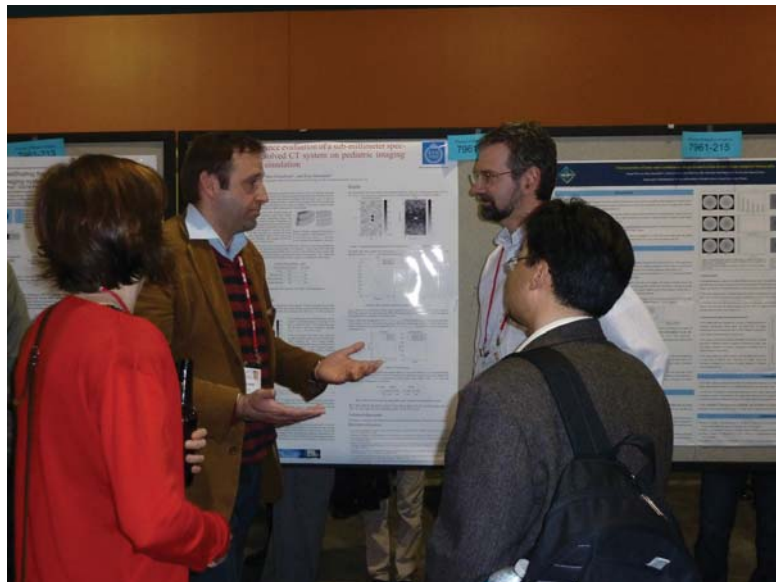
4:30 pm: **Non-invasive quantitative assessment of the outcome of scoliosis spinal surgery**, Lama Seoud, Farida Cheriet, Ecole Polytechnique de Montréal (Canada) and Sainte Justine Hospital Research Ctr. (Canada); Hubert Labelle, Stefan Parent, Sainte Justine Hospital Research Ctr. (Canada) . . . . . [8672-58]

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## 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 Veracruz C. 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, check conference schedules for times.

**Poster Authors:** Please put up your poster during the Tuesday morning coffee break. Posters will be available for viewing Tuesday and Wednesday. Stand with your poster during the poster session from 5:30 to 7:00 pm on Wednesday, and please remove it no later than 9:00 pm. Posters remaining on the boards after the extended viewing time on Wednesday will be discarded.

View Poster Guidelines for additional information:  
<http://spie.org/X30099.xml>

See p. 22-48 for Sunday/Monday Posters

### Conference 8668 Posters Physics of Medical Imaging

#### Algorithm

**Task based assessment of a motion compensation algorithm via simulation of a moving stenotic vessel,** Brian E. Nett, GE Healthcare (USA); Jed D. Pack, GE Global Research (USA); Darin Okerlund, GE Healthcare (USA) . . . . . [8668-81]

**Grid artifact reduction based on homomorphic filtering in digital radiography imaging,** Dong Sik Kim, Hankuk Univ. of Foreign Studies (Korea, Republic of); Sanggyun Lee, Jung Kee Yoon, DRTECH Corp. (Korea, Republic of) . . . . . [8668-82]

**Atlas-based linear volume-of-interest (ABL-VOI) image correction,** Andreas K. Maier, Siemens AG (Germany); Zhenzhen Jiang, Johannes Jordan, Christian Riess, Hannes G. Hofmann, Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8668-83]

**Design and analysis of a calibration-method for stereo-optical motion tracking in MRI using a virtual calibration phantom,** Martin Hoßbach, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Johannes Gregori, Fraunhofer MEVIS (Germany); Stefan Wesarg, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Matthias Günther, Fraunhofer MEVIS (Germany) . . . . . [8668-84]

**Truncation correction for VOI C-arm CT using scattered radiation,** Bastian Bier, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Andreas K. Maier, Siemens AG (Germany); Hannes G. Hofmann, Chris Schwemmer, Yan Xia, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Tobias Struffert, Univ. Erlangen (Germany); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8668-85]

**A papillary muscle guided motion estimation method for gated cardiac imaging,** Jizhe Wang, George S. K. Fung, Tao Feng, Benjamin Tsui, Johns Hopkins Univ. (USA) . . . . . [8668-86]

**Noise reduction of low-dose computed tomography by using the multi-resolution total variation minimization algorithm,** Cheng-Ting Shih, Yan-lin Liu, National Tsing Hua Univ. (Taiwan); Yuan-Jen Chang, Central Taiwan Univ. of Science and Technology (Taiwan); Ming-Che Lee, Changhua Christian Hospital (Taiwan); Jay Wu, China Medical Univ. (Taiwan). [8668-87]

**Monte Carlo modeling of field angle-dependent spectra for x-ray imaging systems,** Edward B. Gindele, Carestream Health, Inc. (USA) . . . . . [8668-88]

**Fast iterative beam hardening correction based on frequency splitting in computed tomography,** Qiao Yang, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Matthias Elter, Siemens AG (Germany); Ingo Schasiepen, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and Siemens AG, H CP CV ME (Germany); Nicole Maass, Siemens AG (Germany); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . [8668-89]

**Removing intra plane blurring in dental panoramas,** Christian Hofmann, Institut für Medizinische Physik (Germany); Michael Knaup, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Marc Kachelrieß, Deutsches Krebsforschungszentrum (Germany) . . . . . [8668-90]

**Cascaded-systems analysis of the DQE of double-Z x-ray detectors including photoelectric, coherent and incoherent interactions,** Seungman Yun, Robarts Research Institute (Canada) and Pusan National Univ. (Korea, Republic of); Jesse Tanguay, Robarts Research Institute (Canada); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of); Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . [8668-91]

**Hybrid EID algorithm for PCD/EID-CT systems,** Katsuyuki Taguchi, George S. K. Fung, Qiulin Tang, Jochen Cammin, Johns Hopkins Univ. (USA) . . . . . [8668-92]

**Cardiac deformation indices derived from motion estimated x-ray computed tomography,** Liwei Jiang, Qiulin Tang, Katsuyuki Taguchi, Johns Hopkins Univ. (USA) . . . . . [8668-93]

**Metal artifact reduction based on beam hardening correction and statistical iterative reconstruction for x-ray computed tomography,** Yanbo Zhang, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8668-94]

#### Cone Beam CT

**A model-based volume restoration approach for Monte Carlo scatter correction in image reconstruction of cone beam CT with limited field of view,** Guozhi Zhang, Reinhilde Jacobs, KU Leuven (Belgium); Hilde Bosmans, UZ Leuven (Belgium) . . . . . [8668-95]

**A method to characterize the radiation output from a cone beam O-arm using a device for dose and dose profile scanning measurement,** Lars Herrnsdorf, Marcus Söderberg, Lund Univ. (Sweden) . . . . . [8668-96]

**Volume of interest CT implemented with a dynamic bowtie filter,** Timothy P. Szczykutowicz, Charles A. Mistretta, Univ. of Wisconsin-Madison (USA) . . . [8668-97]

**Radiation dose reduction and CNR enhancement in C-arm cone beam CT,** Kai Niu, Univ. of Wisconsin-Madison (USA); Jie Tang, Univ. of Wisconsin-Madison (USA); Kevin Royalty, Siemens Medical Solutions USA, Inc. (USA); Orhan Ozkan, Charles M. Strother, Beverly Agaard-Kienitz, Kari Pulfer, Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-100]

**Motion detection in cone-beam computed tomography incorporating a geometric calibration approach,** Rizza D. Pua, Boyeol Yoo, KAIST (Korea, Republic of); Chang Hwan Kim, KAIST (Korea, Republic of) and KAIST (Korea, Republic of); Seungryong Cho, KAIST (Korea, Republic of) . . . . . [8668-101]

**Infinite impulse response filtering for cone beam tomography,** Karl Barth, Frank Dennerlein, Thomas Brunner, Andreas Fieselmann, Rainer Graumann, Siemens AG (Germany) . . . . . [8668-102]

**ML reconstruction of cone-beam projections acquired by a flat-panel rotational x-ray device,** Tim Pfeiffer, Robert Frysch, Sebastian Gugel, Georg Rose, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8668-103]

**A new approach for prospective gated cardiac rotational angiography,** Stijn De Buck, Dieter Dauwe, Jean-Yves Wielandts, Piet Claus, Stefan Janssens, Heidebuchel Hein, Dieter Nuyens, KU Leuven (Belgium) . . . . . [8668-104]

**Simulation study of cone beam CT for visualizing cell clusters in breast biopsies,** Robert J. LeClair, Curtis Laamanen, Laurentian Univ. (Canada) . . . . . [8668-105]

**Cone-beam reconstruction for tilted detector plane and arbitrary detector surface,** Zhengmin Li, Rensselaer Polytechnic Institute (USA) . . . . [8668-106]

**Single-scan energy-selective imaging on cone-beam CT system: a preliminary study,** Xue Dong, Tianye Niu, Lei Zhu, Georgia Institute of Technology (USA) . . . . . [8668-107]

**Development of an integrated x-ray/optical tomography system for the pre-clinical radiation research,** Sohrab Eslami, Yidong Yang, John Wong, Johns Hopkins Univ. (USA); Michael Patterson, McMaster Univ. (Canada); Iulian Iordachita, Johns Hopkins Univ. (USA) . . . . . [8668-108]

**Image reconstruction of arc cone-beam CT with reprojection: a preliminary study and its potential applications,** Shih-Chung B. Lo, Georgetown Univ. Medical Ctr. (USA) . . . . . [8668-109]

**A novel image restoration method for on-board CBCT with deformed prior CT guidelines,** Yuchuan Jian, Duke Univ. (USA) . . . . . [8668-110]

**Conventional CT**

**Evaluation of adaptation strengths of CARE Dose 4D in pediatric CT,** Marcus Söderberg, Lund Univ. (Sweden) and Skåne Univ. Hospital (Sweden); Sonny La, Skåne Univ. Hospital (Sweden) . [8668-111]

**Investigation of accurate image reconstruction from truncated, diagnostic-CT data,** Zheng Zhang, Xiao Han, Junguo Bian, The Univ. of Chicago Medical Ctr. (USA); Alexander A. Zamyatin, Toshiba Medical Research Institute USA (USA); Emil Y. Sidky, Xiaochuan Pan, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8668-112]

**Alternative noise map estimation methods for CT images,** Daxin Shi, Toshiba Medical Research Institute USA (USA) . . . . . [8668-113]

**FPGA-based forward and back projection operators for tomographic reconstruction,** Kyungchan Jin, Korea Institute of Industrial Technology (Korea, Republic of) . . . . . [8668-114]

**Modelling and simulation of a respiratory motion monitor using a continuous wave Doppler radar in near field,** Florian Pfanner, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and Siemens AG, Healthcare Sector (Germany); Thomas Allmendinger, Thomas G. Flohr, Siemens AG, Healthcare Sector (Germany); Marc Kachelrieß, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and German Cancer Research Center (DKFZ) (Germany) . . . . . [8668-115]

**Feasibility study on multiple fan-beam data acquisition for low-dose helical CT,** Taewon Lee, Miran Park, Yunjeong Lee, Seungryoung Cho, KAIST (Korea, Republic of) . . . . . [8668-116]

**Statistical CT noise reduction with multi-scale decomposition and penalized weighted least square for incomplete data,** Shaojie Tang, Xiangyang Tang, Emory Univ. (USA) . . . . . [8668-118]

**CT Reconstruction**

**Bregman regularized statistical image reconstruction method and application to prior image constrained compressed sensing (PICCS),** Yinsheng Li, Univ. of Wisconsin-Madison (USA); Pascal Theriault Lauzier, Univ. of Wisconsin School of Medicine and Public Health (USA); Jie Tang, Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-119]

**A new padding scheme for local tomography in tomographic microscopy,** Yongsheng Pan, Francesco De Carlo, Argonne National Lab. (USA) . . [8668-120]

**Influence of metal segmentation on the quality of metal artifact reduction methods,** Maik Stille, Bärbel Kratz, Jan Müller, Univ. zu Lübeck (Germany); Nicole Maaß, Ingo Schasiepen, Matthias Elter, Siemens AG (Germany); Imke Weyers, Thorsten M. Buzug, Univ. zu Lübeck (Germany) . . . . . [8668-121]

**TV-Stokes strategy for sparse-view CT image reconstruction,** Yan Liu, Lin Chen, Hao Zhang, Ke Wang, Stony Brook Univ. (USA); Jianhua Ma, Southern Medical Univ. (China); Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [8668-122]

**A comparison study of penalized reweighted least-squares approach to sinogram noise reduction and image reconstruction for low-dose cone-beam CT,** Hao Zhang, Yan Liu, Stony Brook Univ. (USA); Jianhua Ma, Southern Medical Univ. (China); Hao Han, Stony Brook Univ. (USA); Jing Wang, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [8668-123]

**Background filtering for accuracy improvement in computed tomography with iterative region-of-interest reconstruction,** Keisuke Yamakawa, Shinichi Kojima, Hitachi, Ltd. (Japan) . . . . . [8668-124]

**Co-registered image quality comparison in hybrid iterative reconstruction techniques: SAFIRE and SafeCT,** Seungwan Lee, Aran Shima, Sarabjeet Singh, Mannudeep K. Kalra, Massachusetts General Hospital (USA); Hee-Joung Kim, Yonsei Univ. (Korea, Republic of); Synho Do, Massachusetts General Hospital (USA) . . . . . [8668-125]

**Iterative CT reconstruction using continuous model,** Yongsheng Pan, Daxin Shi, Alexander A. Zamyatin, Toshiba Medical Research Institute USA, Inc. (USA) . . . . . [8668-126]

**Image reconstruction from limited-angle range projections,** Nan Du, Yusheng Feng, Artyom M. Grigoryan, The Univ. of Texas at San Antonio (USA) . . . . . [8668-127]

**Impact of noise level and edge sharpness of a prior image on the performance of prior image constrained compressed sensing (PICCS),** Yinghua Tao, Jie Tang, Michael A. Speidel, Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-128]

**Evaluation of reconstructed images on the micro-CT system using total variation minimization,** Dae-Hong Kim, Hee-Joung Kim, Pil-Hyun Jeon, Yonsei Univ. (Korea, Republic of) . . . . . [8668-129]

**Low-dose CT reconstruction based on multiscale dictionary,** Ti Bai, Xuanqin Mou, Qiong Xu, Yanbo Zhang, Xi'an Jiaotong Univ. (China) . . . . . [8668-130]

**Detection of low-dose CT reconstruction artifacts using a bi-modal approach,** Salman Mahmood, Klaus Mueller, Stony Brook Univ. (USA) . . . . . [8668-131]

**Truncation artifact correction by support recovery,** Scott S. Hsieh, Stanford Univ. (USA); Guangzhi Cao, Brian E. Nett, GE Healthcare (USA); Norbert J. Pelc, Stanford Univ. (USA) . . . . . [8668-132]

**Detectors**

**Single CPU Monte Carlo simulation of DQE(f) for scintillating x-ray detectors,** Eric Abel, Mingshan Sun, Josh M. Star-Lack, Varian Medical Systems, Inc. (USA); Dragos Constantin, Rebecca Fahrigr, Stanford Univ. (USA) . . . . . [8668-133]

**Achieving sub-pixel resolution using CZT-based photon counting detectors for dedicated breast CT,** Andrey V. Makeev, Stephen J. Glick, Univ. of Massachusetts Medical School (USA); John McGrath, Kromek (UK); Martin Clajus, Scott Snyder, Nova R&D, Inc. (USA) . . . . . [8668-134]

**Application of organic semiconductors in amorphous selenium based photodetectors for high performance x-ray imaging,** Shiva Abbaszadeh, Zhechen Du, Nicholas Allec, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [8668-135]

**Spatial resolution characteristics of a-Se imaging detectors using Monte Carlo methods with detailed spatiotemporal transport of x rays, electrons, and electron-hole pairs under applied bias,** Yuan Fang, Univ. of Waterloo (Canada) and FDA/CDRH/OSEL/DIAM (USA); Andreu Badal, U.S. Food and Drug Administration (USA); Karim S. Karim, Univ. of Waterloo (Canada); Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [8668-136]

**Fabrication and characterization of a novel x-ray silicon detector,** Kyung-Wook Shin, Karim S. Karim, Univ. of Waterloo (Canada) . . . . . [8668-137]

**High performance microstructured Lu<sub>2</sub>O<sub>3</sub>:Eu thin film scintillator for X-ray computed tomography,** Zsolt Marton, Harish B. Bhandari, Charles Brecher, Stuart R. Miller, Bipin Singh, Vivek V. Nagarkar, Radiation Monitoring Devices, Inc. (USA) . . . . . [8668-138]

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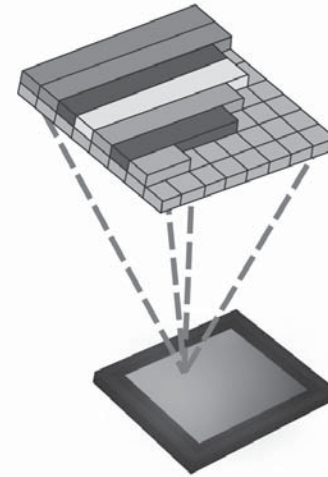
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**Accurate pose estimation using single marker single camera calibration system,** Sarthak Pati, Pascal Fallavollita, Okan Erat, Lejing Wang, Nassir Navab, Technische Univ. München (Germany) . . . . . [8671-78]

**Template-based CTA x-ray angio rigid registration of coronary arteries in frequency domain,** Timur Aksoy, Sabanci Univ. (Turkey); Stefanie Demirci, Technische Univ. München (Germany); Muzaffer Degertekin, Yeditepe Univ. Hospital (Turkey); Nassir Navab, Technische Univ. München (Germany); Gozde Unal, Sabanci Univ. (Turkey) . . . . . [8671-79]

**Interactive initialization for 2D/3D intra-operative registration using the Microsoft Kinect,** Ren-Hui Gong, Ozgur Gueler, Ziv Yaniv, Children's National Medical Ctr. (USA) . . . . . [8671-80]

**Detection of the spatial accuracy of an O-arm in the region of surgical interest,** Tapani Koivukangas, Univ. of Oulu (Finland); Jani P. Katisko, Oulu Univ. Hospital (Finland); John P. Koivukangas, Univ. of Oulu (Finland) and Oulu Univ. Hospital (Finland) . . . . . [8671-81]

**Deformable image registration with content mismatch: a demons variant to account for added material and surgical devices in the target image,** Sajendra Nithiananthan, Ali Uneri, Sebastian Schafer, Daniel J. Mirota, Yoshi Otake, Joseph W. Stayman, Wojciech Zbijewski, A. J. Khanna, Douglas D. Reh, Gary L. Gallia, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . . [8671-82]

**Fuzzy-model-based body-wide anatomy recognition in medical images,** Jayaram K. Udupa, Dewey Odhner, Monica Matsumoto, Yubing Tong, Medical Image Processing Group, Univ. of Pennsylvania (USA); Krzysztof C. Ciesielski, Medical Image Processing Group, Univ. of Pennsylvania (USA) and West Virginia Univ. (USA); Pavithra Vaideeswaran, Victoria Ciesielski, Babak Saboury, Drew Torigan, Medical Image Processing Group, Univ. of Pennsylvania (USA) . . . . . [8671-83]

**Optimal hierarchy for fuzzy object models,** Monica M. S. Matsumoto, Jayaram K. Udupa, Univ. of Pennsylvania (USA) . . . . . [8671-84]

**Segmentation of left atrial intracardiac ultrasound images for image guided cardiac ablation therapy,** Maryam E. Rettmann, Mayo Clinic (USA); Trevor Stephens, Brigham Young Univ. (USA); David R. Holmes III, Cristian A. Linte, Douglas L. Packer, Richard A. Robb, Mayo Clinic (USA) . . . . . [8671-85]

**Automatic probe artifact detection in 3D MRI-guided cryoablation,** Xinyang Liu, Kemal Tuncali, William M. Wells, Gary P. Zientara, Brigham and Women's Hospital (USA) and Harvard Medical School (USA) . . . . . [8671-86]

**Reconstruction method for curvilinear structures from two views,** Matthias Hoffmann, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Alexander Brost, Stanford Univ. (USA); Carolin Jakob, Martin Koch, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Felix Bourier, Klinik für Herzrhythmusstörungen, Krankenhaus Barmherzige Brüder (Germany) and Stanford Univ. (USA); Klaus Kurzdrid, Klinik für Herzrhythmusstörungen, Krankenhaus Barmherzige Brüder (Germany); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Norbert Strobel, Siemens AG (Germany) . [8671-87]

**Efficacy of a novel IGS system in atrial septal defect repair,** Fuad N. Mefleh, Clemson Univ. (USA); George H. Baker, Medical Univ. of South Carolina (USA); David M. Kwartowitz, Clemson Univ. (USA) and Medical Univ. of South Carolina (USA) . . . . . [8671-88]

**Accuracy evaluation of a 3D ultrasound-guided biopsy system,** Walter Wooten III, Emory Univ. (USA) and Emory Univ. (USA); Jonathan A. Nye, David M. Schuster, Peter T. Nieh, Viraj A. Master, John R. Votaw, Baowei Fei, Emory Univ. (USA) . . [8671-89]

**Evaluation of three 3D US calibration methods,** Johann B. Hummel, Medizinische Univ. Wien (Austria) and Community Hospital Wilhelminen (Austria); Marcus Kaar, Rainer Hoffmann, Medizinische Univ. Wien (Austria); Amon Bhatia, Medizinische Univ. Wien (Austria) and Meduni Wien (Austria); Wolfgang Birkfellner, Medizinische Univ. Wien (Austria); Michael Figl, Medizinische Univ. Wien (Austria) . . . . . [8671-90]

**Java multi-histogram volume rendering framework for medical images,** Justin Senseney, National Institutes of Health (USA); Alexandra Bokinsky, Geometric Tools, Inc. (USA); Ruida Cheng, Matthew J. McAuliffe, National Institutes of Health (USA) . . . . . [8671-91]

**3D examination of dental fractures from minimum user intervention,** Andre Souza, Carestream Health, Inc. (USA); Alexandre X. Falcao, Univ. Estadual de Campinas (Brazil); Lawrence Ray, Carestream Health, Inc. (USA) . . [8671-92]

## Conference 8674 Posters Advanced PACS-based Imaging Informatics and Therapeutic Applications

**An intelligent monitoring and management system for cross-enterprise biomedical data sharing platform,** Tushen Wang, Yuanyuan Yang, Jianguo Zhang, Shanghai Institute of Technical Physics (China) . . . . . [8674-29]

**3D segmentation and image annotation for quantitative diagnosis in lung CT images with pulmonary lesions,** Suo Li, Shanghai Institute of Technology and Physics (China); Jianguo Zhang, Shanghai Institute of Technical Physics (China) . . . . . [8674-30]

**Rapid deployment of a Monte Carlo simulation system using diskless remote boot in Linux in a PACS environment,** Yan-Lin Liu, Cheng-Ting Shih, National Tsing Hua Univ. (Taiwan); Shu-Jun Chang, Institute of Nuclear Energy Research (Taiwan); Tian-Yu Shih, China Medical Univ. (Taiwan) and Cheng Ching Hospital at Chung Kang (Taiwan); Jay Wu, China Medical Univ. (Taiwan) . . . [8674-31]

**Integration of PACS and CAD systems using DICOMDIR and open-source tools,** Jiaxin Huang, Alexander Ling, Ronald M. Summers, Jianhua Yao, National Institutes of Health (USA) . . . . . [8674-32]

**Teleradiology network system on cloud using the web medical image conference system with a new information security solution,** Hitoshi Satoh, Tokyo Health Care Univ. (Japan) . . . . . [8674-33]

**Developing an interactive and MIRC-compliant radiology teaching file system,** Marcelo dos Santos, Asa Fujino, Univ. de Sao Paulo (Brazil) . . . . . [8674-34]



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## Conference 8675 Posters Ultrasonic Imaging, Tomography, and Therapy

**Intense acoustic burst ultrasound modulated optical tomography for elasticity mapping of soft biological tissue mimicking phantom: a laser speckle contrast study,** Suheshkumar Singh, Rajan Kanhirodam, Ram Mohan Vasu, Indian Institute of Science (India) . . . . . [8675-38]

**Random Forest learning of ultrasonic statistical physics and object spaces for lesion detection in 2D sonomammography,** Debdoot Sheet, Technische Univ. München (Germany) and Indian Institute of Technology Kharagpur (India); Athanasios Karamalis, Silvan Kraft, Peter B. Noël, Tibor Vag, Technische Univ. München (Germany); Anup Sadhu, EKO CT&MRI Ctr., Medical College and Hospitals Campus (India); Amin Katouzian, Nassir Navab, Technische Univ. München (Germany); Jyotirmoy Chatterjee, Ajoy K. Ray, Indian Institute of Technology Kharagpur (India) . . . . . [8675-39]

**Quality evaluation of ultrasound imaging using a MATLAB test-bench,** Xin Zhao, Stony Brook Univ. (USA); Jun Zhou, Texas A&M Univ. (USA); Wing-Fai Loke, Purdue Univ. (USA); Mohan Chirala, Charlie Zhang, Samsung Dallas Technology Lab. (USA) . . . . . [8675-40]

**Accelerating ultrasound image analysis research through publically available database,** Nikas Revanna Shivaprabhu, Andinet Enquobahrie, Zach Mullen, Stephen Aylward, Kitware, Inc. (USA) . . . . . [8675-41]

**Hardware system of X wave generator with simple driving pulses,** Xu Li, Yaqin Li, Feng Xiao, Ming Yuchi, Mingyue Ding, Huazhong Univ. of Science and Technology (China) . . . . . [8675-42]

**Reduction of rotational asymmetry in PSF synthesis for a broadband forward-looking ring array,** Jing Jin, Ralph T. Hoctor, GE Global Research (USA) . . . . . [8675-43]

**Embedded S/W beamforming platform with reconfigurable multicore processors,** Minsoo Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Changyong Son, Kangeun Lee, Do-Hyung Kim, SAMSUNG Electronics Semiconductor (Korea, Republic of); Shihwa Lee, Samsung Digital City (Korea, Republic of) . . . . . [8675-44]

**A GPU-based real-time short-lag spatial coherence ultrasound imaging system,** Dongwoon Hyun, Jeremy J. Dahl, Gregg E. Trahey, Duke Univ. (USA) . . . . . [8675-45]

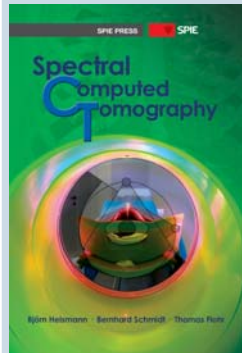
**Ultrasonic ray tomography of long bones: a simulation study,** Peng Shao, Mauricio D. Sacchi, Edmond Lou, Lawrence H. T. Le, Univ. of Alberta (Canada) . . . . . [8675-46]

# Medical Imaging

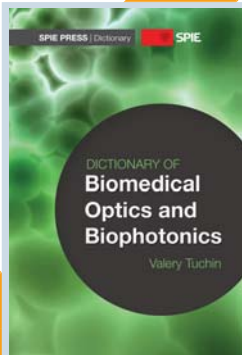
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**Beyond the first Fresnel zone resolution limitation of travel time tomography**, Cuiping Li, Delphinus Medical Technologies, Inc. (USA); Neb Duric, Delphinus Medical Technologies, Inc. (USA) and Karmanos Cancer Institute (USA) . . . . . [8675-47]

**Breast density measurements using ultrasound tomography for patients undergoing tamoxifen treatment**, Mark A. Sak, Karmanos Cancer Institute (USA); Neb Duric, Delphinus Medical Technologies, Inc. (USA); Peter Littrup, Karmanos Cancer Institute (USA); Cuiping Li, Delphinus Medical Technologies, Inc. (USA); Lisa Bey-Knight, Karmanos Cancer Institute (USA); Mark E. Sherman, Gretchen Gierach, National Cancer Institute (USA) . . . . . [8675-48]

**Ultrasound waveform tomography with a modified total-variation regularization scheme**, Youzuo Lin, Lianjie Huang, Los Alamos National Lab. (USA) . . . . . [8675-49]

**Ultrasound waveform tomography using an wave-energy-weighted gradient**, Zhigang Zhang, Lianjie Huang, Los Alamos National Lab. (USA) . . . . . [8675-50]

**A new high definition zoom method based on compounded direct pixel beamforming for medical ultrasound imaging: preliminary results**, Sungsoo Yoon, Changhan Yoon, Sogang Univ. (Korea, Republic of); Jin Ho Chang, Interdisciplinary Program of Integrated Biotechnology, Sogang Univ. (Korea, Republic of) and Sogang Institute of Advanced Technology, Sogang Univ. (Korea, Republic of); Tai-Kyong Song, Sogang Univ. (Korea, Republic of) and Sogang Institute of Advanced Technology, Sogang Univ. (Korea, Republic of); Yangmo Yoo, Sogang Univ. (Korea, Republic of) and Interdisciplinary Program of Integrated Biotechnology, Sogang Univ. (Korea, Republic of) . . . . . [8675-51]

**3D ultrasound coherence imaging based on 2D array design**, Yanping Jia, Mengling Xu, Mingyue Ding, Ming Yuchi, Huazhong Univ. of Science and Technology (China) . . . . . [8675-52]

**Non-blind de-convolution based on PSF selection of minimum variance method for ultrasound imaging**, Jooyoung Kang, Sung-Chan Park, Kyuhong Kim, Jung-Ho Kim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of) . . . . . [8675-53]

**Optimal basis for real-time compression of ultrasound RF signals**, Sharmin Kibria, Patrick A. Kelly, Tamara Sobers, Univ. of Massachusetts Amherst (USA); Jai Gupta, Linda Gupta, Compressive Technologies, Inc. (USA) . . . . . [8675-54]

**Adaptive sound speed correction for abdominal ultrasonography: preliminary results**, Sungmin Jin, Jeeun Kang, Tai Kyong Song, Sogang Univ. (Korea, Republic of); Yangmo Yoo, Sogang Univ. (Korea, Republic of) and Interdisciplinary Program of Integrated Biotechnology, Sogang Univ. (Korea, Republic of) [8675-55]

**Real-time sound speed correction using golden section search to enhance ultrasound imaging quality**, Chong Ook Yoon, Changhan Yoon, Sogang Univ. (Korea, Republic of); Yangmo Yoo, Sogang Univ. (Korea, Republic of) and Interdisciplinary Program of Integrated Biotechnology, Sogang Univ. (Korea, Republic of); Tai-Kyong Song, Sogang Univ. (Korea, Republic of); Jin Ho Chang, Interdisciplinary Program of Integrated Biotechnology, Sogang Univ. (Korea, Republic of) and Sogang Institute of Advanced Technology, Sogang Univ. (Korea, Republic of) . . . . . [8675-56]

**Development of a 3D ultrasound system to investigate post-hemorrhagic hydrocephalus in pre-term neonates**, Jessica Kishimoto, Robarts Research Institute (Canada) and Lawson Health Research Institute (Canada); Sandrine de Ribaupierre, The Univ. of Western Ontario (Canada); Aaron Fenster, Robarts Research Institute (Canada); Keith St. Lawrence, Lawson Health Research Institute (Canada); David Lee, The Univ. of Western Ontario (Canada) . . . . . [8675-58]

**Accuracy assessment of high frequency 3D ultrasound for digital impression taking of prepared teeth**, Stefan Heger, Thorsten Vollborn, RWTH Aachen (Germany); Klaus Radermacher, RWTH Aachen (Germany); Joachim Tinschert, Stefan Wolfart, Univ. Clinic Aachen (Germany) . . . . . [8675-59]

**High-resolution synthetic-aperture ultrasound imaging using wave-equation migration: a clinical study**, Lianjie Huang, Los Alamos National Lab. (USA); Michael Williamson, The Univ. of New Mexico (USA) . . . . . [8675-60]



Conference 8668 continued  
 Physics of Medical Imaging  
 Room: Fiesta 5

**SESSION 8**  
 Room: Fiesta 5 . . . . . Wed 8:00 am to 9:40 am

**Phase Contrast II**  
 Session Chairs: **Norbert J. Pelc**, Stanford Univ. (USA); **John Yorkston**, Carestream Health Technology and Innovation Ctr. (USA)

8:00 am: **Compact hard X-ray grating interferometry for table top phase contrast micro CT**, Thomas Thuring, Paul Scherrer Institut (Switzerland) and ETH Zuerich (Switzerland); Stephan Weiss, Joachim Nuesch, SCANCO Medical AG (Switzerland); Stefan Haemmerle, SCANCO Medical AG (Switzerland); Jan Meiser, Karlsruhe Institute of Technology (Germany); Jürgen Mohr, Karlsruhe Institute of Technology (KIT) (Germany); Christian David, Paul Scherrer Institut (Switzerland); Marco Stampanoni, Paul Scherrer Institut (Switzerland) and ETH Zuerich (Switzerland) . . . . . [8668-37]

8:20 am: **High energy x-ray phase-contrast imaging using glancing angle grating interferometers**, Dan Stutman, Johns Hopkins Univ. (USA); Joseph W. Stayman, Johns Hopkins Univ. (USA) and Johns Hopkins Univ. (USA); Michael Finkenthal, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . . [8668-38]

8:40 am: **Improvements in data processing and iterative tomographic reconstruction in grating-based phase-contrast imaging**, Dieter Hahn, Pierre Thibault, Peter B. Noël, Martin Bech, Franz Pfeiffer, Technische Univ. München (Germany) . . . . . [8668-39]

9:00 am: **Type II beam hardening artifacts in phase contrast imaging**, Nicholas B. Bevins, Henry Ford Health System (USA) and Univ. of Wisconsin-Madison (USA); Ke Li, Univ. of Wisconsin School of Medicine and Public Health (USA); Joseph N. Zambelli, Univ. of Wisconsin School of Medicine and Public Health (USA) and Spectrum Health System (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-40]

9:20 am: **Model observer and human observer performance studies in differential phase contrast CT**, Ke Li, Univ. of Wisconsin School of Medicine and Public Health (USA); Nicholas B. Bevins, Univ. of Wisconsin-Madison (USA); Joseph N. Zambelli, Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-41]

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

Conference 8670 continued  
 Computer-Aided Diagnosis  
 Room: Fiesta 8-10

**SESSION 5**  
 Room: Fiesta 8-10 . . Wed 8:00 am to 9:40 am

**Eye CAD**  
 Session Chairs: **Meindert Niemeijer**, The Univ. of Iowa Hospitals and Clinics (USA); **Thomas M. Deserno**, RWTH Aachen (Germany)

8:00 am: **Automatic age-related macular degeneration detection and staging**, Mark J.J. P. van Grinsven, Yara T. E. Lechanteur, Johannes P. H. van de Ven, Bram van Ginneken, Thomas Theelen, Clara I. Sánchez, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8670-21]

8:20 am: **Automated detection of microaneurysms using robust blob descriptors**, Kadir M. Adal, Sharib Ali, Désiré Sidibé, Univ. de Bourgogne (France); Thomas P. Karnowski, Oak Ridge National Lab. (USA); Fabrice Meriaudeau, Univ. de Bourgogne (France) . . . . . [8670-22]

8:40 am: **Changes in quantitative 3D shape features of the optic nerve head associated with age**, Mark A. Christopher, Li Tang, The Univ. of Iowa Hospitals and Clinics (USA); John H. Fingert, University of Iowa (USA); Todd E. Scheetz, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [8670-23]

9:00 am: **Automated retinal vessel type classification in color fundus images**, Honggang Yu, Eduardo S. Barriga, VisionQuest Biomedical, LLC (USA); Carla P. Agurto Rios, The Univ. of New Mexico (USA); Peter Soliz, VisionQuest Biomedical, LLC (USA) . . . . . [8670-24]

9:20 am: **Retrieving clinically relevant diabetic retinopathy images using a multi-class multiple-instance framework**, Parag S. Chandakkar, Ragav Venkatesan, Baoxin Li, Arizona State Univ. (USA); Helen K. Li, The Univ. of Texas Health Science Ctr. at Houston (USA) . . . . . [8670-25]

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

Conference 8671 continued  
 Image-Guided Procedures, Robotic Interventions, and Modeling  
 Room: Fiesta 1-3

**SESSION 5**  
 Room: Fiesta 1-3 . . . Wed 8:00 am to 9:40 am

**Visualization and Segmentation**  
 Session Chairs: **George J. Grevera**, Saint Joseph's Univ. (USA); **Alexandre X. Falcão**, Univ. Estadual de Campinas (Brazil)

8:00 am: **How a surgeon becomes superman by visualization of intelligently fused multi-modalities**, Okan Erat, Olivier Pauly, Technische Univ. München (Germany); Simon Weidert, Peter Thaller, Ekkehard Euler, Wolf Mutschler, Ludwig-Maximilians-Univ. München (Germany); Nassir Navab, Pascal Fallavollita, Technische Univ. München (Germany) . . . . . [8671-21]

8:20 am: **Non photorealistic rendering for minimally invasive procedures**, Jens Raab, Henry Schäfer, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Alexander Brost, Stanford Univ. (USA); Marc Stamminger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Marcus Pfister, Siemens AG (Germany) . . . . . [8671-22]

8:40 am: **Interactive 3D segmentation of the prostate in magnetic resonance images using shape and local appearance similarity analysis**, Maysam Shahedi, Western Univ. (Canada) and Baines Ctr. for Translational Cancer Research (Canada) and Imaging Research Lab. Roberts Research Institute (Canada); Aaron Fenster, Derek W. Cool, Cesare Romagnoli, Imaging Research Lab., Roberts Research Institute (Canada) and Western Univ. (Canada); Aaron D. Ward, Baines Ctr. for Translational Cancer Research (Canada) and Western Univ. (Canada) . . . . . [8671-23]

9:00 am: **Multi-atlas-based automatic 3D segmentation for prostate brachytherapy in transrectal ultrasound images**, Saman Nouranian, Sara Mahdavi, The Univ. of British Columbia (Canada); Ingrid Spadinger, William J. Morris, British Columbia Cancer Agency (Canada); Septimiu E. Salcudean, Purang Abolmaesumi, The Univ. of British Columbia (Canada) . . . . . [8671-24]

9:20 am: **A statistical multi-vertebrae shape+pose model for segmentation of CT images**, Abtin Rasouliyan, Robert Rohling, Purang Abolmaesumi, Univ. of British Columbia (Canada) . . . . . [8671-25]

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

Joint Session with Conferences 8672 and 8675 Continued  
 Room: Fiesta 6

**SESSION 12**      **SESSION 3**  
 Room: Fiesta 6 . . . . . Wed 8:00 am to 9:40 am

**Keynote and Ultrasound and MR Elastography**  
 Session Chairs: **Chris L. de Korte**, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); **Johan G. Bosch**, Erasmus Univ. Rotterdam (Netherlands)

8:00 am: **Ultrasound strain imaging for quantification of tissue function: cardiovascular and muscle applications** (*Keynote Presentation*), Chris L. de Korte, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8675-1]

8:40 am: **A full inversion unconstrained ultrasound elastography technique for prostate cancer assessment**, Seyed Reza Mousavi, Abbas Samani, The Univ. of Western Ontario (Canada) . . . . . [8672-59]

9:00 am: **Pulmonary ultrasound elastography: a feasibility study with phantoms and ex-vivo tissue**, Man Nguyen, Philips Research North America (USA) and Univ. of Southern California (USA); Hua Xie, Kamila Paluch, Doug Stanton, Bharat Ramachandran, Philips Research North America (USA) . . . . . [8675-2]

9:20 am: **Development of a poroelastic dynamic mechanical analysis technique for biphasic media**, Adam J. Pattison, Matthew D. McGarry, Dartmouth College (USA); John B. Weaver, Keith D. Paulsen, Dartmouth College (USA) and Dartmouth Hitchcock Medical Ctr. (USA) . . . . . [8672-60]

CONFERENCE 8672 ENDS

Conference 8674 continued  
 Advanced PACS-based Imaging Informatics & Therapeutic Applications  
 Room: Monterey 1-3

**SESSION 1**  
 Room: Monterey 1-3 Wed 8:20 am to 9:40 am

**Advanced PACS-based Radiology Workflow I**  
 Session Chair: **Maria Y. Law**, Hong Kong Sanatorium and Hospital (Hong Kong, China)

8:20 am: **An evaluation system for electronic retrospective analyses in radiation oncology: implemented exemplarily for pancreatic cancer**, Kerstin A. Kessel, UniversitätsKlinikum Heidelberg (Germany); Andreas Jäger, Deutsches Krebsforschungszentrum (Germany); Christian Bohn, CHILL GmbH (Germany); Daniel Habermehl, UniversitätsKlinikum Heidelberg (Germany); Lanlan Zhang, Deutsches Krebsforschungszentrum (Germany); Uwe Engelmann, UniversitätsKlinikum Heidelberg (Germany); Nina Bougattf, UniversitätsKlinikum Heidelberg Univ. Heidelberg (Germany); Rolf Bendl, Deutsches Krebsforschungszentrum (Germany); Jürgen Debus, Stephanie E. Combs, UniversitätsKlinikum Heidelberg (Germany) . . . . . [8674-1]

8:40 am: **A distributed plugin based architecture for medical image processing**, Eduardo Romero Castro, Juan C. Leon, Alexander Pinzon, Cesar Sanchez, Univ. Nacional de Colombia (Colombia) . . . . . [8674-2]

9:00 am: **Robust inter-modality multi-atlas segmentation for PACS-based DTI quality control**, Andrew J. Asman, Carolyn B. Lauzon, Bennett A. Landman, Vanderbilt Univ. (USA) . . . . . [8674-3]

9:20 am: **Integration of XNAT/PACS, DICOM, and research software for automated multimodal Image analysis**, Yurui Gao, Institute of Imaging Science, Vanderbilt Univ. (USA) and Biomedical Engineering, Vanderbilt Univ. (USA); Scott S. Burns, Vanderbilt Kennedy Ctr., Vanderbilt Univ. (USA); Carolyn B. Lauzon, Institute of Imaging Science, Vanderbilt Univ. (USA) and Electrical Engineering and Computer Science, Vanderbilt Univ. (USA); Andrew E. Fong, Terry A. James, Blanchfield Army Community Hospital (USA); Joel F. Lubar, Southeastern Biofeedback Institute, Inc. (USA); Robert W. Thatcher, Applied Neuroscience, Inc. (USA); David A. Twillie, Michael D. Wirt, Marc A. Zola, Bret W. Logan, Blanchfield Army Community Hospital (USA); Adam W. Anderson, Biomedical Engineering, Vanderbilt Univ. (USA) and Institute of Imaging Science, Vanderbilt Univ. (USA) and Radiology and Radiological Sciences (USA); Bennett A. Landman, Biomedical Engineering, Vanderbilt Univ. (USA) and Institute of Imaging Science, Vanderbilt Univ. (USA) and Electrical Engineering and Computer Science, Vanderbilt Univ. (USA) . . . . . [8674-4]

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

Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

Conference 8674 continued  
Advanced PACS-based Imaging Informatics & Therapeutic Applications  
Room: Monterey 1-3

Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy  
Room: Fiesta 6

**SESSION 9**  
Room: Fiesta 5 . Wed 10:10 am to 12:10 pm

**Cone Beam CT**  
Session Chairs: **Marc Kachelrieß**, Deutsches Krebsforschungszentrum (Germany); **Iacovos S. Kyrianiou**, U.S. Food and Drug Administration (USA)

10:10 am: **Intensity modulated CT implemented with a dynamic bowtie filter**, Timothy P. Szczykutowicz, Charles A. Mistretta, Univ. of Wisconsin-Madison (USA) .[8668-42]

10:30 am: **Noise reduction in material decomposition for low-dose dual-energy cone-beam CT**, Wojciech Zbijewski, Grace J. Gang, Adam S. Wang, Joseph W. Stayman, Katsuyuki Taguchi, John A. Carrino, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . .[8668-43]

10:50 am: **A novel temporal deconvolution technique to enable cone beam CT perfusion imaging using an interventional C-arm system**, Jie Tang, Univ. of Wisconsin-Madison (USA); Min Xu, Beihang Univ. (China) and Univ. of Wisconsin-Madison (USA); Kai Niu, Univ. of Wisconsin-Madison (USA); Kevin Royalty, Siemens Medical Solutions USA, Inc. (USA) and Univ. of Wisconsin-Madison (USA); Kari Pulfer, Charles M. Strother, Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . .[8668-44]

11:10 am: **Algebraic reconstruction technique with motion compensation**, Roman Krylov, Univ. of Central Florida (USA); Alexander A. Zamyatin, Toshiba Medical Research Institute USA (USA) . . . . .[8668-45]

11:30 am: **Reconstruction from truncated projections in cone-beam CT using an efficient 1D filtering**, Yan Xia, Friedrich-Alexander-Univ. Erlangen-Nuremberg (Germany); Andreas K. Maier, Siemens AG (Germany); Hannes G. Hofmann, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Frank Dennerlein, Siemens AG (Germany); Kerstin Müller, Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . .[8668-46]

11:50 am: **Development and spatial resolution characterization of a dedicated pulsed x-ray, cone-beam breast CT system**, Peymon Gazi, Kai Yang, George Burkett, Univ. of California, Davis (USA); John M. Boone, Univ. of California, Davis (USA) . . . . .[8668-47]

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

8668 continues on page 49 ➡

**SESSION 6**  
Room: Fiesta 8-10 Wed 10:10 am to 12:10 pm

**Panel Discussion and Head and Neck I**  
Session Chairs: **Heang-Ping Chan**, Univ. of Michigan Health System (USA); **Hayit Greenspan**, Tel Aviv Univ. (Israel)

**PANEL DISCUSSION . . . . . Wed 10:10 am**  
**Challenges in CAD development and commercialization**, Eliot L. Siegel, Univ. of Maryland Medical Ctr. (USA); Ronald M. Summers, National Institutes of Health (USA); Julian Marshall, Hologic/R2 (USA); Berkman Sahiner, U.S. Food and Drug Administration (USA); Maryellen L. Giger, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8670-26]

The topic of the panel is “Challenges in CAD development and commercialization.” Our panelists will address the following issues:

- Is CAD gaining momentum in clinical practice? If not, why not?
- Is CAD gaining momentum in research? If not, why not? If yes, are the right challenges being addressed?
- Is CAD research impacting commercial and clinical efforts? If not, why not?
- Should CAD output be archived? Will archiving CAD output lead to more malpractice lawsuits or will it minimize the number and impact of malpractice lawsuits?
- Is there an impression in research or in clinics that CAD lacks scientific rigor and is second class citizen as a research topic and/or diagnostic tool?

11:30 am: **Classification of Alzheimer's disease using regional saliency maps from brain MR volumes**, Andrea Marcella Pulido, Univ. Nacional de Colombia (Colombia); Andrea Rueda Olarte, Univ. Nacional de Colombia Sede Medellin (Colombia); Eduardo Romero Castro, Univ. Nacional de Colombia (Colombia)[8670-27]

11:50 am: **Improved multimodal biomarkers for Alzheimer's disease and mild cognitive impairment diagnosis: data from ADNI**, Antonio Martinez-Torteya, Victor M. Treviño-Alvarado, José G. Tamez-Peña, Tecnológico de Monterrey (Mexico) [8670-28]

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

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**SESSION 6**  
Room: Fiesta 1-3 Wed 10:10 am to 12:10 pm

**Simulation and Modeling**  
Session Chairs: **Michael I. Miga**, Vanderbilt Univ. (USA); **Kenneth H. Wong**, Virginia Polytechnic Institute and State Univ. (USA)

10:10 am: **Estimating Periodic Organ Motions based on Inverse Kinematics using Tetrahedron Mesh Registration**, Nahyup Kang, Ji-Yeon Kim, Samsung Group (Korea, Republic of); Kyung Hwan Kim, Hyong-Euk Lee, James D. K. Kim, ChangYeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8671-26]

10:30 am: **Sources of error in CEMRA-based CFD simulations of the common carotid artery**, Muhammad O. Khan, Univ. of Toronto (Canada); Bruce A. Wasserman, Johns Hopkins Univ. (USA); David A. Steinman, Univ. of Toronto (Canada) . . . . . [8671-27]

10:50 am: **A patient specific 4D MRI liver motion model based on sparse imaging and registration**, Yolanda H. Noorda, Lambertus W. Bartels, Marijn van Stralen, Josien P. W. Pluim, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [8671-28]

11:10 am: **Sensitivity analysis and automation for intraoperative implementation of the atlas-based method for brain shift correction**, Ishita Chen, Amber L. Simpson, Kay Sun, Reid C. Thompson, Michael I. Miga, Vanderbilt Univ. (USA) . . . . . [8671-29]

11:30 am: **Image based cardiac acceleration map using statistical shape models; in-vitro study on biventricular heart phantom**, Ali Pashaei, Catalina Tobon-Gomez, Xavier Planes, Gemma Piella, Univ. Pompeu Fabra (Spain); Nicolas Duchateau, Teresa M. de Caralt, Marta Sitges, Hospital Clinic, Univ. de Barcelona (Spain); Alejandro F. Frangi, The Univ. of Sheffield (UK) . . . . . [8671-30]

11:50 am: **Measuring soft tissue material properties using stereovision and indentation: a proof-of-concept study**, Songbai Ji, Xiaoyao Fan, Alex Hartov, Dartmouth College (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Dartmouth College (USA) . . . . . [8671-31]

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

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**SESSION 2**  
Room: Monterey 1-3 Wed 10:10 am to 12:10 pm

**Advanced PACS-based Radiology Workflow II**  
Session Chair: **Steven C. Horii**, The Univ. of Pennsylvania Health System (USA)

10:10 am: **Region-based volumetric medical image retrieval**, Antonio Foncubierta-Rodriguez, Univ. of Applied Sciences Western Switzerland (Switzerland); Henning Müller, Adrien Depeursing, Univ. of Applied Sciences Western Switzerland (Switzerland) and Univ. and Univ. Hospitals of Geneva (HUG) (Switzerland) . . . . . [8674-5]

10:30 am: **Computer-assisted identification and volumetric quantification of enhancement in brain MRI: an interactive system**, Shandong Wu, The Univ. of Pennsylvania Health System (USA); Nicholas G. Avgeropoulos, M.D. Anderson Cancer Ctr. Orlando (USA); David J. Rippe, Florida Hospital Zephyrhills (USA); Mubarak Ali Shah, Univ. of Central Florida (USA) . . . . . [8674-6]

10:50 am: **How inaccurate is weight as a metric for patient size? Comparing patient weight to effective diameter for size-specific dose estimation**, Tessa S. Cook, Seetharam C. Chadalavada, William W. Boonn, The Univ. of Pennsylvania Health System (USA) . . . . . [8674-7]

11:10 am: **A multimedia system for decision support in neurological classification of pain in spinal cord injury patients**, Sneha K. Verma, The Univ. of Southern California (USA); Sophia Chun, Veterans Affairs Clinic (USA); Brent J. Liu, The Univ. of Southern California (USA) . . . . . [8674-8]

11:30 am: **Integration of imaging informatics-based multiple sclerosis eFolder system for multisite clinical trials utilizing IHE workflow profiles**, Kevin C. Ma, Nakul Reddy, Lilyana Amezcua, The Univ. of Southern California (USA); Brent J. Liu, The Univ. of Southern California (USA) . . . . . [8674-9]

11:50 am: **The use of ultrasound structured reporting to shorten dictation time**, Steven C. Horii, The Univ. of Pennsylvania Health System (USA); Hanna Zafar, Univ. of Pennsylvania (USA); Jill Langer, Beverly Coleman, The Univ. of Pennsylvania Health System (USA) . . . . . [8674-10]

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

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**SESSION 4**  
Room: Fiesta 6 . . . Wed 10:10 am to 12:10 pm

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

10:10 am: **Correlation-based discrimination between cardiac tissue and blood for segmentation of 3D echocardiographic images**, Anne E. Saris, Maartje M. Nillesen, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Richard G. P. Lopata, Technical Univ. Eindhoven (Netherlands); Chris L. de Korte, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8675-3]

10:30 am: **3D segmentation and reconstruction of endobronchial ultrasound**, Xiaonan Zang, The Pennsylvania State Univ. (USA); Mikhail Breslav, Boston Univ. (USA); William E. Higgins, The Pennsylvania State Univ. (USA) . . . . . [8675-4]

10:50 am: **Statistical segmentation of carotid plaque neovascularization**, Zeynettin Akkus, Johan G. Bosch, Erasmus MC (Netherlands); Gonzalo V. S. Ferrero, Valladolid Univ. (Spain); Diego D. B. Carvalho, Guillaume Renaud, Stijn C. H. van den Oord, Gerrit L. ten Kate, Arend F. L. Schinkel, Nico de Jong, Antonius F. W. van der Steen, Erasmus MC (Netherlands) . . . . . [8675-5]

11:10 am: **Extracting cardiac myofiber orientation from high frequency ultrasound images**, Xulei Qin, Zhibin Cong, Rong Jiang, Ming Shen, Mary B. Wagner, Paul Kirshbom, Baowei Fei, Emory Univ. (USA) . . . . . [8675-6]

11:30 am: **3D ultrasound registration to track ovarian follicular dynamics in polycystic ovarian syndrome, a condition leading to infertility**, Christian E. Anderson, Mallory R. Busso, Case Western Reserve Univ. (USA); Noam Lazebnik, William Hurd, Univ. Hospitals Case Medical Ctr. (USA); David L. Wilson, Case Western Reserve Univ. (USA)[8675-7]

11:50 am: **Automated detection of adipose tissue layer in ultrasound images**, Gokul Swamy, Nitya Subramanian, GE Global Research (India); Cynthia Davis, Ying Fan, GE Global Research (USA); Sheshadri Thiruvenkadam, GE Global Research (India) . . . . . [8675-8]

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

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

Conference 8674 continued  
Advanced PACS-based Imaging Informatics & Therapeutic Applications  
Room: Monterey 1-3

Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy  
Room: Fiesta 6

**SESSION 10**  
Room: Fiesta 5 . . . . . Wed 1:20 pm to 3:00 pm

**Metrology/Phantoms II**  
Session Chairs: **John A. Rowlands**, Thunder Bay Regional Research Institute (Canada); **John Yorkston**, Carestream Health Technology and Innovation Ctr. (USA)

1:20 pm: **Development of a phantom-based methodology for the assessment of quantification performance in CT**, Baiyu Chen, Ehsan Samei, Duke Univ. (USA) . . . . . [8668-48]

1:40 pm: **Soft-tissue imaging in low-dose, C-arm cone-beam CT using statistical image reconstruction**, Adam S. Wang, Sebastian Schafer, Joseph W. Stayman, Yoshito Otake, Marc S. Sussman, A. J. Khanna, Gary L. Gallia, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . . [8668-49]

2:00 pm: **Modeling and control of nonstationary noise characteristics in filtered-backprojection and penalized likelihood image reconstruction**, Grace J. Gang, Joseph W. Stayman, Wojciech Zbijewski, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . . [8668-50]

2:20 pm: **Preliminary investigation of the frequency response and distortion properties of nonlinear image processing algorithms**, Jered R. Wells, James T. Dobbins III, Duke Univ. (USA) . . . . . [8668-51]

2:40 pm: **Scatter correction with kernel perturbation**, Josh M. Star-Lack, Mingshan Sun, Varian Medical Systems, Inc. (USA) . . . . . [8668-52]

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

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**SESSION 7**  
Room: Fiesta 8-10 . . Wed 1:20 pm to 3:00 pm

**Gastrointestinal and Liver CAD**  
Session Chairs: **Janne J. Näppi**, Massachusetts General Hospital (USA); **Horst K. Hahn**, Fraunhofer MEVIS (Germany)

1:20 pm: **Evaluation of radiologists' performance in detection of 'difficult' polyps in CT colonography with and without CAde: observer performance study**, Kenji Suzuki, The Univ. of Chicago (USA); Masatoshi Hori, Osaka Univ. (Japan); Gen Iinuma, National Cancer Ctr. (Japan); Abraham H. Dachman, The Univ. of Chicago (USA) . . . . . [8670-29]

1:40 pm: **Computer-aided detection of early cancer in the esophagus using HD endoscopy images**, Fons van der Sommen, Svitlana Zinger, Technische Univ. Eindhoven (Netherlands); Erik J. Schoon, Catharina-ziekenhuis (Netherlands); Peter H. N. de With, Technische Univ. Eindhoven (Netherlands) . . . . . [8670-30]

2:00 pm: **Low-dose dual-energy electronic cleansing for fecal-tagging CT Colonography**, Wenli Cai, Da Zhang, June-Goo Lee, Hiroyuki Yoshida, Massachusetts General Hospital (USA) . . . . . [8670-31]

2:20 pm: **Blood vessel-based liver segmentation through the portal phase of a CT dataset**, Ahmed S. Maklad, Mikio Matsuhiro, Hidenobu Suzuki, Yoshiki Kawata, Noboru Niki, Tohru Utsunomiya, Mitsuo Shimada, Noriyuki Moriyama, Univ. of Tokushima (Japan) . . . . . [8670-32]

2:40 pm: **Image patch-based method for automated detection of focal liver lesions on CT**, Hayit Greenspan, Tel Aviv Univ. (Israel); Raghav Pasari, Daniel Rubin, Stanford Univ. (USA) . . . . . [8670-33]

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

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**SESSION 7**  
Room: Fiesta 1-3 . . . Wed 1:20 pm to 3:00 pm

**Keynote and Orthopedic Procedures**  
Session Chairs: **David R. Holmes III**, Mayo Clinic (USA); **Ziv R. Yaniv**, Children's National Medical Ctr. (USA)

1:20 pm: **Patient and process specific imaging and visualization for computer assisted interventions (Keynote Presentation)**, Nassir Navab, Technische Univ. München (Germany) . . . . [8671-32]

2:20 pm: **A video guided solution for screw insertion in orthopedic plate fixation**, Jessica Magaraggia, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Gerhard Kleinszig, Rainer Graumann, Siemens AG (Germany); Elli Angelopoulou, Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8671-33]

2:40 pm: **Model-based cone-beam CT reconstruction for image-guided minimally invasive treatment of hip osteolysis**, Yoshito Otake, Joseph W. Stayman, Wojciech Zbijewski, Johns Hopkins Univ. (USA); Ryan J. Murphy, Kutler D. Michael, Johns Hopkins Univ. Applied Physics Lab. (USA); Russell H. Taylor, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA); Mehran Armand, Johns Hopkins Univ. Applied Physics Lab. (USA) . . . . . [8671-34]

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

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**SESSION 3**  
Room: Monterey 1-3 Wed 1:20 pm to 3:00 pm

**Medical Image Sharing and Exchange**  
Session Chair: **Jianguo Zhang**, Shanghai Institute of Technical Physics (China)

1:20 pm: **Secured processing of medical data using Grid/Cloud computing**, Andreas Thiel, OFFIS e.V. (Germany); Frank Hertel, Johannes Bernarding, Institute for Biometry and Medical Informatics, Univ. Magdeburg (Germany) . . . . . [8674-11]

1:40 pm: **Image communication, storage and computing in e-science platform for translational biomedical imaging research**, Jianguo Zhang, Tushen Wang, Yuanyuan Yang, Mingqing Wang, Shanghai Institute of Technical Physics, Chinese Academy of Sciences (China); Haibo Hu, School of Biomedical Engineering, Shanghai Jiao Tong Univ. (China) [8674-12]

2:00 pm: **Transmission of DICOM studies using multi-series DICOM format**, Mahmoud M. Ismail, James F. Philbin, Johns Hopkins Univ. (USA) . . . . . [8674-13]

2:20 pm: **Image management and analysis in OpenClinica using web services**, Thomas M. Deserno, Christian Samsel, Johan Gehlen, Daniel Haak, RWTH Aachen (Germany) . . . . . [8674-14]

2:40 pm: **Recommending Images of User Interests from the Biomedical Literature**, Steven Clukey, The Univ. of Tennessee Knoxville (USA); Songhua Xu, Oak Ridge National Lab (USA) . . . [8674-15]

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

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**SESSION 5**  
Room: Fiesta 6 . . . . . Wed 1:20 pm to 3:00 pm

**Transducers and Front-End Systems**  
Session Chair: **Bae-Hyung Kim**, SAMSUNG Electronics Co., Ltd. (Korea, Republic of)

1:20 pm: **Volumetric ultrasound image-forming using fully controllable 2D CMUT-on-ASIC arrays**, Bae-Hyung Kim, Jongkeun Song, Seunghun Lee, Youngil Kim, Kyungil Cho, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8675-13]

1:40 pm: **CMUT-based volumetric ultrasonic imaging array design for forward looking ICE and IVUS applications**, Coskun Tekes, Jaime Zahorian, Sarp Satir, Toby Xu, Georgia Institute of Technology (USA); Mustafa Karaman, Isik Univ. (Turkey); Muhammad Rashid, Gokce Gurun, Jennifer Hasler, Levent Degertekin, Georgia Institute of Technology (USA) . . . . . [8675-10]

2:00 pm: **3D ultrasound imaging with two orthogonal 1D arrays on a 2D array transducer**, Morten F. Rasmussen, Jørgen A. Jensen, Technical Univ. of Denmark (Denmark) . . . . . [8675-11]

2:20 pm: **Phase-rotation based receive-beamformer for miniaturized volumetric ultrasound imaging scanners using 2-D CMUT-on-ASIC arrays**, Bae-Hyung Kim, Seunghun Lee, Jongkeun Song, Youngil Kim, Kyungil Cho, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8675-12]

2:40 pm: **2D capacitive micromachined ultrasound transducer using novel tiling based on silicon frame**, Youngil Kim, Kyungil Cho, Bae-Hyung Kim, Seunghun Lee, Taeho Jeon, Jongkeun Song, Samsung Advanced Institute of Technology (Korea, Republic of) . . [8675-9]

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

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Conference 8668 continued  
 Physics of Medical Imaging  
 Room: Fiesta 5

Conference 8670 continued  
 Computer-Aided Diagnosis  
 Room: Fiesta 8-10

Conference 8671 continued  
 Image-Guided Procedures, Robotic Interventions, and Modeling  
 Room: Fiesta 1-3

Conference 8674 continued  
 Advanced PACS-based Imaging Informatics & Therapeutic Applications  
 Room: Monterey 1-3

Conference 8675 continued  
 Ultrasonic Imaging, Tomography, and Therapy  
 Room: Fiesta 6

**SESSION 11**  
 Room: Fiesta 5 . . . . . Wed 3:30 pm to 5:30 pm

**CT Reconstructions**  
 Session Chairs: **Jeffrey H. Siewerdsen**, Johns Hopkins Univ. (USA); **Jinyi Qi**, Univ. of California, Davis (USA)

3:30 pm: **Splitting-based statistical x-ray CT image reconstruction with blind gain correction**, Hung Nien, Jeffrey A. Fessler, Univ. of Michigan (USA) . . . . . [8668-53]

3:50 pm: **Tradeoff between noise properties and local impulse response in statistical prior image constrained compressed sensing**, Pascal Theriault Lauzier, Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-54]

4:10 pm: **Overcoming nonlinear partial volume effects in known-component reconstruction of cochlear implants**, Joseph W. Stayman, Hao Dang, Yoshito Otake, Wojciech Zbijewski, Johns Hopkins Univ. (USA); Jack H. Noble, Benoit M. Dawant, Robert F. Labadie, Vanderbilt Univ. (USA); John P. Carey, Jeffrey H. Siewerdsen, Johns Hopkins Univ. (USA) . . . . . [8668-55]

4:30 pm: **Impact of norm selections on the performance of prior image constrained compressed sensing (PICCS)**, Yinsheng Li, Jie Tang, Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . . [8668-56]

4:50 pm: **Comparative evaluation of linear interpolation models for iterative reconstruction in x-ray CT**, Katharina Schmitt, Utah Ctr. for Advanced Imaging Research (USA) and Univ. of Erlangen-Nuremberg (Germany) and Siemens AG, Healthcare Sector (Germany); Harald Schoendube, Karl Stierstorfer, Siemens AG, Healthcare Sector (Germany); Frederic Noo, The Univ. of Utah (USA) . . . . [8668-57]

5:10 pm: **Dose reduction in CT with correlated-polarity noise reduction: comparable image quality at half the dose with projection space processing**, James T. Dobbins III, Jered R. Wells, William P. Segars, Duke Univ. (USA) . . . . . [8668-58]

**SESSION 8**  
 Room: Fiesta 8-10 . . Wed 3:30 pm to 5:30 pm

**Head and Neck CAD II**  
 Session Chairs: **Catalin Fetita**, TELECOM & Management SudParis (France); **Hiroshi Fujita**, Gifu Univ. School of Medicine (Japan)

3:30 pm: **Visual analysis of longitudinal brain tumor perfusion**, Sylvia Glaßer, Steffen Oeltze, Otto-von-Guericke Univ. Magdeburg (Germany); Uta Preim, Univ. Hospital Magdeburg (Germany); Atle Bjornerud, The Norwegian Radium Hospital (Norway) and Univ. of Oslo (Norway); Helwig Hauser, Univ. of Bergen (Norway); Bernhard Preim, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8670-34]

3:50 pm: **Differentiating cerebral lymphomas and GBMs featuring luminance distribution analysis**, Toshihiko Yamasaki, Tsuhan Chen, Cornell Univ. (USA); Toshinori Hirai, Ryuji Murakami, Kumamoto Univ. (Japan) . . . . . [8670-35]

4:10 pm: **Assessment of quantitative cortical biomarkers in the developing brain of preterm infants**, Pim Moeskops, Manon J. N. L. Benders, Paul C. Pearlman, Karina J. Kersbergen, Alexander Leemans, Max A. Viergever, Ivana Isgum, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [8670-36]

4:30 pm: **Computer-aided diagnosis of acute ischemic stroke based on cerebral hypoperfusion using 4D CT angiography**, Jean-Paul Charbonnier, Image Sciences Institute (Netherlands); Ewoud J. Smit, Univ. Medical Ctr. Utrecht (Netherlands); Max A. Viergever, Image Sciences Institute (Netherlands); Birgitta K. Velthuis, Univ. Medical Ctr. Utrecht (Netherlands); Pieter C. Vos, Image Sciences Institute (Netherlands) . . . . . [8670-37]

4:50 pm: **Automatic detection and segmentation of ischemic lesions in computed tomography images of stroke patients**, Pieter C. Vos, Image Sciences Institute, Univ. Medical Ctr. Utrecht (Netherlands); J. Matthijs Biesbroek, Nick A. Weaver, Birgitta K. Velthuis, Univ. Medical Ctr. Utrecht (Netherlands); Max A. Viergever, Image Sciences Institute, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [8670-38]

5:10 pm: **Detection of white matter lesions in cerebral small vessel disease**, Medhat M. Riad, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Bram Platel, Fraunhofer MEVIS (Germany); Frank-Erik de Leeuw, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8670-39]

**SESSION 8**  
 Room: Fiesta 1-3 . . . Wed 3:30 pm to 5:30 pm

**Registration and Tracking**  
 Session Chair: **Steven L. Hartmann**, Medtronic Navigation (USA)

3:30 pm: **Automatic real-time tracking of fetal mouth in fetoscopic video sequence for supporting fetal surgeries**, Rong Xu, Tianliang Xie, Jun Ohya, Bo Zhang, Waseda Univ. (Japan); Yoshinobu Sato, Osaka Univ. (Japan); Masakatsu G. Fujie, Waseda Univ. (Japan) . . . . . [8671-35]

3:50 pm: **A knowledge-driven quasi-global registration of thoracic-abdominal CT and CBCT for image-guided interventions**, Li Zhang, Christophe Chef'd'hotel, Siemens Corporate Research (USA); Vincent Ordy, Siemens Corp. (USA); Jie Zheng, Xiang Deng, Siemens Ltd. (China) . . . . . [8671-36]

4:10 pm: **Significant acceleration of 2D-3D registration-based fusion of ultrasound and x-ray images by mesh-based DRR rendering**, Markus Kaiser, Siemens AG (Germany) and Innovation Ctr. Computer Assisted Surgery (ICCAS) (Germany); Matthias John, Anja Borsdorf, Siemens AG (Germany); Peter Mountney, Razvan Ionasec, Siemens Corporate Research (USA); Alois Nöttling, Siemens AG (Germany); Philipp Kiefer, Univ. Leipzig (Germany); Thomas Neumuth, Innovation Ctr. Computer Assisted Surgery (ICCAS) (Germany); Jörg Seeburger, Univ. Leipzig (Germany) . . . . . [8671-37]

4:30 pm: **Thin plate spline feature point matching for organ surfaces in minimally invasive surgery imaging**, Bingxiang Lin, Yu Sun, Xiaoning Qian, Univ. of South Florida (USA) . . . . . [8671-38]

4:50 pm: **3D-3D registration of partial capitate bones using spin-images**, Ryan E. Breighner, David R. Holmes III, Mayo Clinic, Biomechanics Lab. (USA); Shuai Leng, Mayo Clinic (USA); Kai-Nan An, Mayo Clinic (USA) and Mayo Clinic, Biomechanics Lab. (USA); Cynthia McCollough, Mayo Clinic (USA); Kristin Zhao, Mayo Clinic, Biomechanics Lab. (USA) . . . . . [8671-39]

5:10 pm: **A framework for measuring TRE at the tip of an optically tracked pointing stylus**, Amber L. Simpson, Neal P. Dillon, Michael I. Miga, Vanderbilt Univ. (USA); Burton Ma, York Univ. (Canada) . . . [8671-40]

**SESSION 4**  
 Room: Monterey 1-3 Wed 3:30 pm to 5:10 pm

**Quantitative Analysis and Diagnostics, Knowledge, Search and Data Mining**  
 Session Chair: **Eliot L. Siegel**, Univ. of Maryland Medical Ctr. (USA)

3:30 pm: **Storage and breast region segmentation for a non-distributed approach to clinical scale content-based image retrieval in mammography**, Fumbeya Marungo, Paul Taylor, Univ. College London (UK) . . . . . [8674-16]

3:50 pm: **Determining the importance of figures in journal articles to find representative images**, Henning Müller, Univ. of Applied Sciences Western Switzerland (Switzerland); Antonio Foncubierta-Rodríguez, Univ. of Applied Sciences Western Switzerland (Switzerland); Chang Lin, Fujian Medical Univ. (China); Ivan Eggel, Univ. of Applied Sciences Western Switzerland (Switzerland) . . . . . [8674-17]

4:10 pm: **Separating compound figures in journal articles to allow for subfigure classification**, Ajad Chhatkuli, Univ. of Applied Sciences Western Switzerland (Switzerland) and Univ. of Burgundy, Le Creusot (France); Dimitrios Markonis, Antonio Foncubierta-Rodríguez, Univ. of Applied Sciences Western Switzerland (Switzerland); Fabrice Mériaudeau, Univ. de Bourgogne (France); Henning Müller, Univ. of Applied Sciences Western Switzerland (Switzerland) and Medical Informatics, Univ. Hospitals & Univ. of Geneva (Switzerland) . . . . . [8674-18]

4:30 pm: **Example-Based Segmentation for Breast Mass Images**, Qingying Huang, Sun Yat-sen Univ. (China); Songhua Xu, Oak Ridge National Lab. (USA); Xiaonan Luo, Sun Yat-sen University (China) . . . . . [8674-19]

4:50 pm: **Text- and content-based biomedical image modality classification**, Daekeun You, National Library of Medicine (USA); Md Mahmudur Rahman, National Library of Medicine (USA); Sameer Antani, Dina Demner-Fushman, George R. Thoma, National Library of Medicine (USA) . . . . . [8674-21]

**SESSION 6**  
 Room: Fiesta 6 . . . . . Wed 3:30 pm to 5:30 pm

**Keynote and Vector Velocity Imaging and Doppler**  
 Session Chairs: **Jørgen Arendt Jensen**, Technical Univ. of Denmark (Denmark); **Johan G. Bosch**, Erasmus Univ. Rotterdam (Netherlands)

3:30 pm: **New developments in vector velocity imaging using the transverse oscillation approach (Keynote Presentation)**, Jørgen A. Jensen, Michael J. Pihl, Jacob B. Olesen, Technical Univ. of Denmark (Denmark); Peter M. Hansen, Kristoffer L. Hansen, Michael B. Nielsen, Department of Radiology, Rigshospitalet, Copenhagen University Hospital (Denmark) . . . . . [8675-14]

4:10 pm: **Initial investigation of pressure gradient estimation from ultrasound vector velocity images**, Jacob B. Olesen, Marie S. Enevoldsen, Jønne Marcher, Michael J. Pihl, Technical Univ. of Denmark (Denmark); Jens M. Hansen, BK Medical (Denmark); Peter M. Hansen, Michael B. Nielsen, Carsten Thomsen, Copenhagen Univ. Hospital (Denmark); Svetoslav I. Nikolov, BK Medical (Denmark); Jørgen A. Jensen, Technical Univ. of Denmark (Denmark) . . . . . [8675-15]

4:30 pm: **Preliminary example of 3D vector flow imaging**, Michael J. Pihl, Matthias B. Stuart, Borislav G. Tomov, Technical Univ. of Denmark (Denmark); Jens M. Hansen, BK Medical (Denmark) and Technical Univ. of Denmark (Denmark); Morten F. Rasmussen, Jørgen A. Jensen, Technical Univ. of Denmark (Denmark) . . . . . [8675-16]

4:50 pm: **Strain estimation of carotid artery using multi-element synthetic aperture imaging with a virtual source element**, Rohit Nayak, Sanghamithra Korukonda, Marvin M. Doyley, Univ. of Rochester (USA) . . . . . [8675-17]

5:10 pm: **A new three-component signal model to objectively select power Doppler wall filter cut-off velocity for quantitative microvascular imaging**, Mai Elfarnawany, Robarts Research Institute (Canada) and Biomedical Engineering Graduate Program, The Univ. of Western Ontario (Canada); James C. Lacefield, The Univ. of Western Ontario (Canada) and The Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada) . . . . . [8675-18]

Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

Conference 8674 continued  
Advanced PACS-based Imaging Informatics & Therapeutic Applications  
Room: Monterey 1-3

Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy  
Room: Fiesta 6

**SESSION 12**  
Room: Fiesta 5 . . . . .Thu 8:00 am to 9:40 am

**CT Design**  
Session Chairs: **Christoph Hoeschen**, Helmholtz Zentrum München GmbH (Germany); **Taly G. Schmidt**, Marquette Univ. (USA)

8:00 am: **A moving blocker system for cone-beam computed tomography scatter correction**, Luo Ouyang, Kwang Song, Timothy Solberg, Jing Wang, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA) . . . . .[8668-59]

8:20 am: **Optimized control of a dynamic, pre-patient attenuator**, Scott S. Hsieh, Norbert J. Pelc, Stanford Univ. (USA) . . . . . [8668-60]

8:40 am: **Technical feasibility of CT perfusion using a C-arm CBCT system**, Min Xu, Beihang Univ. (China) and Univ. of Wisconsin-Madison (USA); Jie Tang, Univ. of Wisconsin-Madison (USA); Kevin Royalty, Siemens Medical Solutions USA, Inc. (USA) and Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) . . . . .[8668-61]

9:00 am: **An online motion- and misalignment-correction method for medical flat-detector CT**, Julia Wicklein, Willi A. Kalender, Institut für Medizinische Physik (Germany); Yiannis Kyriakou, Holger Kunze, Siemens AG, Healthcare Sector (Germany) . . . . . [8668-62]

9:20 am: **Can motion compensated reconstruction improve best phase reconstruction in Cardiac CT?**, Herbert K. Bruder, Christopher Rohkohl, Siemens Medical Solutions GmbH (Germany); Rainer Raupach, Siemens HealthCare (Germany); Karl Stierstorfer, Siemens Medical Solutions GmbH (Germany); Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany) and Siemens, HealthCare (Germany) . . . . . [8668-63]

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**SESSION 9**  
Room: Fiesta 8-10 . . Thu 8:00 am to 9:40 am

**Cardiovascular CAD**  
Session Chairs: **Marius George Linguraru**, Children’s National Medical Ctr. (USA); **Marleen de Bruijne**, Erasmus MC (Netherlands)

8:00 am: **Automatic stent strut detection in intravascular OCT images using image processing and classification technique**, Hong Lu, Madhusudhana Gargesha, Zhao Wang, Case Western Reserve Univ. (USA); Daniel Chamie, Guilherme F. Attiziani, Tomoaki Kanaya, Univ. Hospitals of Cleveland (USA); Soumya Ray, Case Western Reserve Univ. (USA); Marco A. Costa, Univ. Hospitals of Cleveland (USA); Andrew M. Rollins, Case Western Reserve Univ. (USA); Hiram G. Bezerra, Univ. Hospitals of Cleveland (USA); David L. Wilson, Case Western Reserve Univ. (USA) . . . . .[8670-40]

8:20 am: **Computerized detection of non-calcified plaques in coronary CT angiography: topological soft-gradient detection method for plaque prescreening**, Jun Wei, Chuan Zhou, Heang-Ping Chan, Aamer R. Chughtai, Smita Patel, Prachi Agarwal, Jean W. Kuriakose, Lubomir M. Hadjiiski, Ella A. Kazerooni, Univ. of Michigan Health System (USA) . . . . . [8670-41]

8:40 am: **Computer-aided scheme for functional index computation of left ventricle in cardiac CTA: segmentation and partitioning of left ventricle**, Hui Huang, Xiaohai Zhuang, Yi Shao, Tian Lan, Liu Liu, Qiang Li, Shanghai Advanced Research Institute (China) . . . . . [8670-42]

9:00 am: **Computer-based assessment of left ventricular wall stiffness in patients with ischemic dilated cardiomyopathy**, Yi Su, Soo Kng Teo, A\*STAR Institute of High Performance Computing (Singapore); Ru San Tan, National Heart Ctr. Singapore (Singapore) and National Univ. of Singapore (Singapore); Chi Wan Lim, A\*STAR Institute of High Performance Computing (Singapore); Liang Zhong, National Heart Ctr. Singapore (Singapore) . . . . . [8670-43]

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**SESSION 9**  
Room: Fiesta 1-3 . . . . Thu 8:00 am to 9:20 am

**Robotics and Needle Procedures**  
Session Chair: **Robert J. Webster III**, Vanderbilt Univ. (USA)

8:00 am: **Percutaneous needle placement using laser guidance: a practical solution**, Sheng Xu, Ankur Kapoor, Nadine Abi-Jaoudeh, Kimberly Imbesi, Cheng W. Hong, Dumitru Mazilu, Karun Sharma, Aradhana Venkatesan, Elliot Levy, Bradford J. Wood, National Institutes of Health (USA) . . . . . [8671-42]

8:20 am: **Software for MR image overlay guided needle insertions: the clinical translation process**, Tamas Ungi, Paweena U-Thainual, Queen’s Univ. (Canada); Jan Fritz, Johns Hopkins Univ. (USA); Aaron J. Flammang, Siemens Corporate Research (USA); Iulian Iordachita, John A. Carrino, Johns Hopkins Univ. (USA); Gabor Fichtinger, Queen’s Univ. (Canada) . . . . . [8671-43]

8:40 am: **A fully actuated robotic assistant for MRI-guided prostate biopsy and brachytherapy**, Gang Li, Worcester Polytechnic Institute (USA); Hao Su, Weijian Shang, Worcester Polytechnic Institute (USA); Junichi Tokuda, Nobuhiko Hata, Clare M. Tempny, Brigham and Women’s Hospital (USA) and Harvard Medical School (USA); Gregory S. Fischer, Worcester Polytechnic Institute (USA) . . . . . [8671-44]

9:00 am: **Design of a decoupled MRI-compatible force sensor using fiber Bragg grating sensors for robot-assisted prostate interventions**, Reza Monfaredi, Lab. for Computational Sensing and Robotics (LCSR), Johns Hopkins Univ. (USA); Reza seifabadi, Lab. for Computational Sensing and Robotics (LCSR), Johns Hopkins Univ. (USA) and Queen’s Univ. (Canada); Gabor Fichtinger, Queens Univ. (Canada); Iulian Iordachita, Lab. for Computational Sensing and Robotics (LCSR), Johns Hopkins Univ. (USA) . . . . . [8671-45]

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**SESSION 5**  
Room: Monterey 1-3 Thu 8:00 am to 9:40 am

**Therapeutic Applications and Extending Imaging Informatics beyond Radiology**  
Session Chair: **Heinz U. Lemke**, Computer Assisted Radiology and Surgery (USA)

8:00 am: **Extending the XNAT archive tool for image and analysis management in ophthalmology research**, Andreas Wahle, Kyungmoo Lee, Adam T. Harding, The Univ. of Iowa (USA); Mona K. Garvin, The Univ. of Iowa (USA) and Veterans Affairs (USA); Meindert Niemeijer, Milan Sonka, The Univ. of Iowa (USA); Michael D. Abramoff, The Univ. of Iowa (USA) and Veterans Affairs (USA) . . . . . [8674-22]

8:20 am: **SuperRIVAM: software for the computation of the super-resolution of medical images and video**, Aldo Camargo, Ingenia Technology Ltd. (Peru) . . . . . [8674-23]

8:40 am: **Role of an imaging informatics-based DICOM-RT cancer registry in evaluating treatment parameters of IMRT for prostate cancer**, Ruchi R. Deshpande, Alyssa Zhou, Jeffrey Zhang, The Univ. of Southern California (USA); John DeMarco, Univ. of California, Los Angeles (USA); Brent J. Liu, The Univ. of Southern California (USA) . . . . . [8674-24]

9:00 am: **An imaging informatics-based multimedia electronic medical record (eMR) system for data management and decision support in rehabilitation research**, Ximing Wang, Sneha K. Verma, Yi Qin, Josh Sterling, Alyssa Zhou, Jeffrey Zhang, Clarisa Martinez, Narissa Casebeer, Hyunwook Koh, Carolee Winstein, The Univ. of Southern California (USA); Brent J. Liu, The Univ. of Southern California (USA) . . . . . [8674-25]

9:20 am: **Training system for digital mammographic diagnoses of breast cancer**, Ricardo L. Thomaz, Marcela G. N. Crozara, Ana C. Patrocínio, Univ. Federal de Uberlândia (Brazil) . . . . . [8674-26]

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**SESSION 7**  
Room: Fiesta 6 . . . . . Thu 8:00 am to 9:40 am

**Ultrasound Tomography and Acoustic Microscopy**  
Session Chairs: **Neb Duric**, Delphinus Medical Technologies, Inc. (USA); **Nicole V. Ruiter**, Karlsruhe Institut für Technologie (Germany)

8:00 am: **Breast imaging with the SoftVue scanner: first results**, Neb Duric, Peter Littrup, Cuiping Li, Olivier Roy, Steven Schmidt, Delphinus Medical Technologies, Inc. (USA); Lisa Bey-Knight, Karmanos Cancer Institute (USA); Roman Janer, Xiaoyang Chen, Jeffrey Goll, William Greenway, Delphinus Medical Technologies, Inc. (USA) . . . . . [8675-19]

8:20 am: **Sound speed based patient-specific biomechanical modeling for registration of USCT volumes with X-ray mammograms**, Torsten Hopp, Aurélien Stromboni, Karlsruher Institut für Technologie (Germany); Neb Duric, Barbara Ann Karmanos Cancer Institute (USA); Michael Zapf, Hartmut Gemmeke, Nicole V. Ruiter, Karlsruher Institut für Technologie (Germany) . . . . . [8675-20]

8:40 am: **Characterization of human breast cancer by scanning acoustic microscopy**, Di Chen, Barbara Ann Karmanos Cancer Institute (USA) and Wayne State Univ. (USA); Brett Senay, Univ. of Windsor (Canada); Eugene V. Malyarenko, Tessonics Corp (USA); Fedar Seviaryn, Univ. of Windsor (Canada); Mark E. Sherman, National Cancer Institute (USA); Sudeshna Bandyopadhyay, Wayne State Univ. School of Medicine (USA); Gretchen Gierach, National Cancer Institute (USA); Elena Maeve, Univ. of Windsor (Canada); Neb Duric, Delphinus Medical Technologies, Inc. (USA); Roman G. Maev, Univ. of Windsor (Canada) . . . . . [8675-21]

9:00 am: **Experimental evaluation of noise generated by grating lobes for a sparse 3D ultrasound computer tomography system**, Nicole V. Ruiter, Michael Zapf, Torsten Hopp, Hartmut Gemmeke, Karlsruher Institut für Technologie (Germany) . . . . . [8675-22]

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

Conference 8674 continued  
Advanced PACS-based Imaging Informatics & Therapeutic Applications  
Room: Monterey 1-3

Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy  
Room: Fiesta 6

**SESSION 12 (CONTINUED)**  
Room: Fiesta 5 . . . . Thu 8:00 am to 9:40 am

**SESSION 9 (CONTINUED)**  
Room: Fiesta 8-10 . . Thu 8:00 am to 9:40 am

**SESSION 9 (CONTINUED)**  
Room: Fiesta 1-3 . . . .Thu 8:00 am to 9:20 am

**SESSION 5 (CONTINUED)**  
Room: Monterey 1-3 .Thu 8:00 am to 9:40 am

**SESSION 7 (CONTINUED)**  
Room: Fiesta 6 . . . . Thu 8:00 am to 9:40 am

9:20 am: **Patient-specific coronary artery blood flow simulation using myocardial volume partitioning**, Kyung Hwan Kim, Samsung Advanced Institute of Technology (Korea, Republic of); Dongwoo Kang, The Univ. of Southern California (USA); Nahyup Kang, Ji-Yeon Kim, Hyong-Euk Lee, James D. K. Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8670-44]

9:20 am: **GPU based acceleration of 3D USCT image reconstruction with efficient integration into MATLAB**, Ernst Kretzek, Michael Zapf, Matthias Birk, Hartmut Gemmeke, Nicole V. Rüter, Karlsruher Institut für Technologie (Germany) . . . . . [8675-23]

**Poster Award Announcements**  
Room: Fiesta 6 . . . Thu 9:40 am to 9:45 am  
The Physics of Medical Imaging conference poster award recipients will be recognized and certificates distributed.

**Poster Award Announcements**  
Room: Fiesta 8-10 Thu 9:40 am to 9:45 am  
The Computer-Aided Diagnosis conference poster award recipients will be recognized and certificates distributed.

**Poster Award Announcements**  
Room: Fiesta 1-3 . Thu 9:40 am to 9:45 am  
The Image-Guided Procedures, Robotic Interventions, and Modeling conference poster award recipients will be recognized and certificates distributed.

**Poster Award Announcements**  
Room: Monterey 1-3. . Thu 9:40 to 9:45 am  
The Advanced PACS-based Imaging Informatics and Therapeutic Applications conference poster award recipients will be recognized and certificates distributed.

**Poster Award Announcements**  
Room: Fiesta 6 . . . Thu 9:40 am to 9:45 am  
The Ultrasonic Imaging, Tomography, and Therapy conference poster award recipients will be recognized and certificates distributed.

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


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


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


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

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

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Conference 8668 continued  
Physics of Medical Imaging  
Room: Fiesta 5

**SESSION 13**  
Room: Fiesta 5 . . . Thu 10:10 am to 12:10 pm  
**Multi-energy CT**  
Session Chairs: **Mats E. Danielsson**, Royal Institute of Technology (Sweden); **Taly G. Schmidt**, Marquette Univ. (USA)  
10:10 am: **Positron emission tomography coincidence detection with photon polarization**, Aimee L. McNamara, The Univ. of Sydney (Australia) and Australian Nuclear Science and Technology Organisation (Australia); Kinwah Wu, Univ. College London (UK); David Boardman, Mark I. Reinhard, Australian Nuclear Science and Technology Organisation (Australia); Zdenka Kuncic, The Univ. of Sydney (Australia) . . . . . [8668-64]  
10:30 am: **Liver imaging: image quality evaluation and comparison between single and dual energy protocols**, Yuan Yao, Stanford Univ. (USA); Alec Magibow, New York Univ. Langone Medical Ctr. (USA); Norbert J. Pelc, Stanford Univ. (USA) . . . . . [8668-65]  
10:50 am: **A maximum-likelihood expectation-maximization approach to simultaneously reconstruct the activity and attenuation map in SPECT imaging**, Abhinav K. Jha, Eric Clarkson, Matthew A. Kupinski, Harrison H. Barrett, The Univ. of Arizona (USA) . . . . . [8668-66]  
11:10 am: **Experimental study of optimal energy weighting in energy-resolved CT using a CZT detector**, Franco Ruppich, Taly Gilat-Schmidt, Marquette Univ. (USA) . . . . . [8668-67]  
11:30 am: **Objective assessment of penalized maximum likelihood reconstruction with L1-penalty for low-count myocardial perfusion SPECT imaging**, Joyeeta M. Mukherjee, Univ. of Massachusetts Medical School (USA) . . . . . [8668-68]  
11:50 am: **Spectra optimization for dual-energy contrast-enhanced breast CT**, Pablo Milioni de Carvalho, GE Healthcare France (France) and Univ. Paris Sud XI (France); Ann-Katherine Carton, Sylvie Saab-Puong, Razvan Iordache, Serge Muller, GE Healthcare France (France) . . . . . [8668-69]  
Lunch Break . . . . Thu 12:10 pm to 1:20 pm

Conference 8670 continued  
Computer-Aided Diagnosis  
Room: Fiesta 8-10

**SESSION 10**  
Room: Fiesta 8-10 Thu 10:10 am to 12:10 pm  
**Breast CAD I**  
Session Chairs: **Joseph Y. Lo**, Duke Univ. (USA); **Lubomir M. Hadjiiski**, Univ. of Michigan Health System (USA)  
10:10 am: **Automated assessment of bilateral breast volume asymmetry as a breast cancer biomarker during mammographic screening**, Alex C. Williams, Austin Hitt, Middle Tennessee State Univ. (USA); Sophie Voisin, Georgia Tourassi, Oak Ridge National Lab. (USA) . . . . [8670-45]  
10:30 am: **A fully-automated software pipeline for integrating breast density and parenchymal texture analysis for digital mammograms: parameter optimization in a case-control breast cancer risk assessment study**, Yuanjie Zheng, The Univ. of Pennsylvania Health System (USA); Yan Wang, Brad M. Keller, Univ. of Pennsylvania School of Medicine (USA); Emily F. Conant, The Univ. of Pennsylvania Health System (USA); James C. Gee, Univ. of Pennsylvania (USA); Despina Kontos, The Univ. of Pennsylvania Health System (USA) . [8670-46]  
10:50 am: **Fully-automated fibroglandular tissue segmentation and volumetric density estimation in breast MRI by integrating a continuous max-flow model and a likelihood atlas**, Shandong Wu, Susan P. Weinstein, Emily F. Conant, Despina Kontos, The Univ. of Pennsylvania Health System (USA) . . . . . [8670-47]  
11:10 am: **Breast segmentation in MR images using three-dimensional spiral scanning and dynamic programming**, Luan Jiang, Yanyun Lian, Shanghai Advanced Research Institute (China); Yajia Gu, Fudan Univ. Cancer Hospital (China); Qiang Li, Shanghai Advanced Research Institute (China) . . . . . [8670-48]  
11:30 am: **Symmetry-based detection and diagnosis of DCIS in breast MRI**, Abhilash Skrikantha, Fraunhofer MEVIS (Germany) and Univ. de Bourgogne (France); Markus T. Harz, Lei Wang, Fraunhofer MEVIS (Germany); Bram Platel, Fraunhofer MEVIS (Netherlands); Ritse M. Mann, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Horst K. Hahn, Heinz-Otto Peitgen, Fraunhofer MEVIS (Germany) . . . . . [8670-49]  
11:50 am: **Association between bilateral asymmetry of kinetic feature computed from the DCE-MRI images and breast cancer detection**, Qian Yang, Lihua Li, Hangzhou Dianzi Univ. (China); Bin Zheng, Univ. of Pittsburgh (Armenia); Juan Zhang, Zhejiang Cancer Hospital (China); Chengjie Zhang, Hangzhou Dianzi Univ. (China); Guoliang Shao, Zhejiang Cancer Hospital (China) . . . . . [8670-50]  
Lunch Break . . . . Thu 12:10 pm to 1:20 pm

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling  
Room: Fiesta 1-3

**SESSION 10**  
Room: Fiesta 1-3 . .Thu 10:10 am to 12:10 pm  
**Joint Session with Conferences 8671 and 8674**  
**Keynote and Digital Operating Room and Knowledge Integration in the OR**  
Session Chairs: **Frank Sauer**, Siemens Corporate Research (USA); **William W. Boonn**, The Univ. of Pennsylvania Health System (USA)  
10:10 am: **The digital operating room: towards intelligent infrastructures and processes** (*Keynote Presentation*), Heinz U. Lemke, Computer Assisted Radiology and Surgery (USA) . . . . . [8674-27]  
10:50 am: **Integration of intraoperative and model-updated images into an industry-standard neuronavigation system: initial results**, Timothy J. Schaeve, Medtronic, Inc. (USA); Xiaoyao Fan, Songbai Ji, Alex Hartov, Thayer School of Engineering at Dartmouth (USA); Leslie Hiemenz Holton, Medtronic, Inc. (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA); David Simon, Medtronic, Inc. (USA) . . . . . [8671-46]  
11:10 am: **Ontology-based prediction of surgical events in laparoscopic surgery**, Darko Katic, Karlsruhe Institut für Technologie (Germany); Anna-Laura Wekerle, Ruprecht-Karls- Univ. Heidelberg (Germany); Fabian Gärtner, Karlsruhe Institut für Technologie (Germany); Hannes Kenngott, Beat Peter Müller-Stich, Ruprecht-Karls- Univ. Heidelberg (Germany); Rüdiger Dillmann, Stefanie Speidel, Karlsruhe Institut für Technologie (Germany) . . . . . [8671-47]  
11:30 am: **Integration of 3D 1H-magnetic resonance spectroscopy data into neuronavigation systems for tumor biopsies**, Berkay Kanberoglu, Arizona State Univ. (USA); Nina Z. Moore, Barrow Neurological Institute (USA); David H. Frakes, Arizona State Univ. (USA) and Arizona State Univ. (USA); Lina J. Karam, Arizona State Univ. (USA); Josef P. Debbins, Barrow Neurological Institute (USA) and Arizona State Univ. (USA); Mark C. Preul, Barrow Neurological Institute (USA) . . . . . [8671-48]  
11:50 am: **In memory of three pioneers: Ledley (Biomedical Imaging)**, Greenfield (Medical Physics) and Kangaroo (PACS and Informatics), Han K. Huang, The Univ. of Southern California (USA) . . . . . [8674-28]  
Lunch Break . . . . . Thu 12:10 pm to 1:20 pm

Conference 8674 continued  
Advanced PACS-based Imaging Informatics & Therapeutic Applications  
Room: Fiesta 1-3

**SESSION 6**  
Room: Fiesta 1-3 . Thu 10:10 am to 12:10 pm  
**CONFERENCE 8674 ENDS**

Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy  
Room: Fiesta 6

**SESSION 8**  
Room: Fiesta 6 . . . Thu 10:10 am to 12:10 pm  
**Ultrasound Beamforming**  
Session Chair: **Jorgen Arendt Jensen**, Technical Univ. of Denmark (Denmark)  
10:10 am: **Transmission mode adaptive beamforming for planar phased arrays and its application to 3D ultrasonic transcranial imaging**, Kiyanoosh Shapoori, Univ. of Toronto (Canada) and Research Associate, Tessonics Inc. (Canada); Jeff Sadler, Univ. of Windsor (Canada); Adrian Wydra, Institute for Diagnostic Imaging Research, Univ. of Windsor (Canada); Eugene V. Malyarenko, Tessonics Corp. (USA); Anthony N. Sinclair, Univ. of Toronto (Canada); Roman G. Maev, Univ. of Windsor (Canada) and Institute for Diagnostic Imaging Research, Univ. of Windsor (Canada) . . . . . [8675-24]  
10:30 am: **Frequency division multiple transmission method to utilize the wide bandwidth property of capacitive micromachined ultrasonic transducer arrays**, Seunghun Lee, Bae-Hyung Kim, Youngil Kim, Kyungil Cho, Jongkeun Song, Samsung Advanced Institute of Technology (Korea, Republic of) . [8675-25]  
10:50 am: **A sigma-delta beamformer with integrated apodization**, Martin C. Hemmsen, Matthias B. Stuart, Borislav G. Tomov, Jorgen A. Jensen, Technical Univ. of Denmark (Denmark) . . . . . [8675-26]  
11:10 am: **A synthetic aperture study of aperture size in the presence of noise and in vivo clutter**, Nick Bottenus, Brett C. Byram, Gregg E. Trahey, Duke Univ. (USA) . . . . . [8675-27]  
11:30 am: **Ultrasonic reverberation and off-axis clutter suppression using aperture domain signal decomposition**, Brett C. Byram, Duke Univ. (USA) [8675-28]  
11:50 am: **Blind de-convolution based on coded excitation**, Sunghan Park, Samsung Electronics (Korea, Republic of) . . . . . [8675-29]  
Lunch Break . . . . Thu 12:10 pm to 1:20 pm

Conference 8668 continued  
Physics of Medical Imaging

Room: Fiesta 5

**SESSION 14**

Room: Fiesta 5 . . . . . Thu 1:20 pm to 3:00 pm

**Mammography**

Session Chairs: **Despina Kontos**,  
The Univ. of Pennsylvania Health System (USA);  
**Joseph Y. Lo**, Duke Univ. (USA)

1:20 pm: **Measurement of breast-tissue x-ray attenuation by spectral mammography: first results on cyst fluid**, Erik Fredenberg, Philips Women's Healthcare (Sweden); David R. Dance, The Royal Surrey County Hospital NHS Trust (UK) and Univ. of Surrey (UK); Paula Willsher, Cambridge Breast Unit and NIHR Cambridge Biomedical Research Ctr., Addenbrookes Hospital (UK); Miriam von Tiedemann, Philips Women's Healthcare (Sweden); Kenneth C. Young, The Royal Surrey County Hospital NHS Trust (UK) and Univ. of Surrey (UK); Matthew G. Wallis, Cambridge Breast Unit and NIHR Cambridge Biomedical Research Ctr., Addenbrookes Hospital (UK). . . . . [8668-70]


1:40 pm: **Model observer detectability as a substitute for contrast detail analysis in routine digital mammography quality control**, Elena Salvagnini, UZ Gasthuisberg (Belgium) and SCK•CEN (Belgium); Kim Lemmens, Hilde Bosmans, UZ Gasthuisberg (Belgium); Lara Struelens, SCK•CEN (Belgium); Nicholas W. Marshall, UZ Gasthuisberg (Belgium) . . . . . [8668-71]

2:00 pm: **Intensity standardization in breast MR images for improving breast tissue quantification**, Shandong Wu, Jayaram K. Udupa, Aikaterini Marinaki, Susan P. Weinstein, Despina Kontos, The Univ. of Pennsylvania Health System (USA). . . . . [8668-72]

2:20 pm: **Conventional mammographic image generation in dual-energy digital mammography**, Xi Chen, Xi'an Jiaotong Univ. (China); Robert M. Nishikawa, The Univ. of Chicago (USA); Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8668-73]

2:40 pm: **Testing realism of software breast phantoms: texture analysis of synthetic mammograms**, Predrag R. Bakic, Brad M. Keller, Yuanjie Zheng, Yan Wang, James C. Gee, Despina Kontos, Andrew D. A. Maidment, The Univ. of Pennsylvania Health System (USA). . . . . [8668-74]

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

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Conference 8670 continued  
Computer-Aided Diagnosis

Room: Fiesta 8-10

**SESSION 11**

Room: Fiesta 8-10 . . . . . Thu 1:20 pm to 3:00 pm

**Prostate and Oncology**

Session Chairs: **Xiaofeng Yang**,  
Emory Univ. (USA); **Berkman Sahiner**,  
U.S. Food and Drug Administration (USA)

1:20 pm: **A prostate cancer computer-aided diagnosis system using multimodal magnetic resonance imaging and targeted biopsy labels**, Peter R. Liu, Shijun Wang, Baris Turkbey, Kinzya Grant, Peter A. Pinto, Peter Choyke, Bradford J Wood, Ronald M. Summers, National Institutes of Health (USA) . . . . . [8670-51]

1:40 pm: **Computer-aided diagnosis of prostate cancer: robustness of quantitative image analysis on T2-weighted and diffusion-weighted MR images**, Yahui Peng, Yulei Jiang, Tatjana Antic, Maryellen L. Giger, Scott Eggener, Aytakin Oto, The Univ. of Chicago Medical Ctr. (USA). . . . . [8670-52]

2:00 pm: **Ultrasound RF time series for tissue typing: first in-vivo clinical results**, Mehdi Moradi, Sara Mahdavi, Guy Nir, Edward C. Jones, Larry Goldenberg, Septimiu E. Salcudean, The Univ. of British Columbia (Canada) . . . . . [8670-53]

2:20 pm: **Iterative multiple reference tissue method for estimating pharmacokinetic parameters on prostate DCE MRI**, Shoshana Ginsburg, Rutgers, The State Univ. of New Jersey (USA); B. Nicolas Bloch, Boston Medical Ctr. (USA); Neil M. Rofsky, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Elizabeth M. Genega, Beth Israel Deaconess Medical Ctr. (USA); Robert E. Lenkinski, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8670-54]

2:40 pm: **Automatic abdominal lymph node detection method based on local intensity structure analysis from 3D x-ray CT images**, Yoshihiko Nakamura, Yukitaka Nimura, Nagoya Univ. (Japan); Takayuki Kitasaka, Shinji Mizuno, Aichi Institute of Technology (Japan); Kazuhiro Furukawa, Hidemi Goto, Nagoya Univ. School of Medicine (Japan); Michitaka Fujiwara, Nagoya Univ. (Japan); Kazunari Misawa, Aichi Cancer Ctr. Research Institute (Japan); Masaaki Ito, National Cancer Ctr. Hospital East (Japan); Shigeru Nawano, International Univ. of Health and Welfare (Japan); Kensaku Mori, Nagoya Univ. (Japan) . . . . . [8670-55]

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

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Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling

Room: Fiesta 1-3

**SESSION 11**

Room: Fiesta 1-3 . . . . . Thu 1:20 pm to 3:00 pm

Joint Session with Conferences 8671 and 8675

**Ultrasound Image Guidance:**

Session Chairs: **Johan G. Bosch**, Erasmus Univ. Rotterdam (Netherlands); **David R. Holmes III**, Mayo Clinic (USA); **Purang Abolmaesumi**, The Univ. of British Columbia (Canada)

1:20 pm: **Freehand ultrasound calibration: phantom versus tracked pointer**, Mattea L. Welch, Jennifer Andrea, Tamas Ungi, Gabor Fichtinger, Queen's Univ. (Canada). . . . . [8671-49]

1:40 pm: **Vibro-acoustography by using 1.75D ultrasound array transducer to detect and localize permanent prostate brachytherapy seeds: ex vivo study**, Mohammad Mehrmohammadi, Azra Alizad, Randall R. Kinnick, Matthew W. Urban, Brian J. Davis, Mayo Clinic (USA); Mostafa Fatemi, Mayo Clinic (USA). . . . . [8675-30]

2:00 pm: **Development of a 3D ultrasound-guided system for thermal ablation of liver tumors**, Hamid Sadeghi Neshat, Robarts Research Institute (Canada); Derek W. Cool, Western Univ. (Canada); Kevin Barker, Lori Gardi, Robarts Research Institute (Canada); Nirmal Kakani, Western Univ. (Canada); Aaron Fenster, Robarts Research Institute (Canada) . . . . . [8671-50]

2:20 pm: **Simplified stereo-optical ultrasound plane calibration**, Martin HoBbach, Matthias Noll, Stefan Wesarg, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) . . . . . [8675-31]

2:40 pm: **Geometric reconstruction using tracked ultrasound strain imaging**, Thomas S. Pfeiffer, Amber L. Simpson, Janet E. Ondrake, Michael I. Miga, Vanderbilt Univ. (USA). . . . . [8671-51]

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

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Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy

Room: Fiesta 1-3

**SESSION 9**

Room: Fiesta 1-3 . . . . . Thu 1:20 pm to 3:00 pm

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Conference 8668 continued  
Physics of Medical Imaging

Room: Fiesta 5

SESSION 15

Room: Fiesta 5 . . . . . Thu 3:30 pm to 5:30 pm

Dose

Session Chairs: **Christoph Hoeschen**, Helmholtz Zentrum München GmbH (Germany); **Bruce R. Whiting**, Univ. of Pittsburgh (USA)

3:30 pm: **Estimation of patient dose with standard and low-dose MDCT fluoroscopy protocols for lung biopsy**, Federica Zanca, Annelies Jacobs, Walter De Wever, Wouter Crijns, Raymond Oyen, Hilde Bosmans, UZ Leuven (Belgium) . . . . . [8668-75]

3:50 pm: **Radiation dose reduction in dual-energy CT using prior image constrained compressed sensing: image quality evaluation in virtual monochromatic imaging**, Stephen Brunner, Yinsheng Li, Jie Tang, Kari Pulfer, Univ. of Wisconsin-Madison (USA); Jiang Hsieh, GE Healthcare (USA); Howard Rowley, Univ. of Wisconsin-Madison (USA); Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) [8668-76]

4:10 pm: **Dependence of area and volumetric mammographic breast density estimation on radiation dose**, Hao Jing, Brad M. Keller, R Crescenzi, Emily F. Conant, Andrew D. A. Maidment, Despina Kontos, Univ. of Pennsylvania (USA) . . . . . [8668-77]

4:30 pm: **A real-time radiation dose monitoring system for patients and staff during interventional fluoroscopy using a GPU-accelerated Monte Carlo simulator and an automatic 3D localization system based on a Kinect depth camera**, Andreu Badal, U.S. Food and Drug Administration (USA); Fahad Zafar, Han Dong, U.S. Food and Drug Administration (USA) and Univ. of Maryland Baltimore County (USA); Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [8668-78]

4:50 pm: **Projection-based dose metric: accuracy testing and applications for CT design**, Xiaoyu Tian, CT Systems and Applications Lab., GE Global Research (USA); Zhye Yin, CT Systems and Applications Lab., GE Global Research (USA); Bruno De Man, CT Systems and Applications Lab., GE Global Research (USA); Ehsan Samei, Carl E. Ravin Advanced Imaging Labs., Duke Univ. (USA) . . . . . [8668-79]

5:10 pm: **Organ dose in chest CT: effect of modulation scheme on estimation accuracy**, Xiang Li, William P. Segars, Ehsan Samei, Duke Univ. Medical Ctr. (USA) . . . . . [8668-80]

Conference 8670 continued  
Computer-Aided Diagnosis

Room: Fiesta 8-10

SESSION 12

Room: Fiesta 8-10 . . . . . Thu 3:30 pm to 5:30 pm

Breast CAD II

Session Chair: **Tobias Klinder**, Philips Research North America (Germany)

3:30 pm: **Detection of microcalcifications in breast tomosynthesis reconstructed with multiscale bilateral filtering regularization**, Ravi K. Samala, Heang-Ping Chan, Yao Lu, Lubomir M. Hadjiiski, Jun Wei, Univ. of Michigan Health System (USA); Berkman Sahiner, U.S. Food and Drug Administration (USA); Mark A. Helvie, Univ. of Michigan Health System (USA) . . . . . [8670-56]

3:50 pm: **Fast microcalcification detection in ultrasound images using image enhancement and threshold adjacency statistics**, Baek Hwan Cho, Chu-Ho Chang, Jong-Ha Lee, Samsung Advanced Institute of Technology (Korea, Republic of); Eun Young Ko, SAMSUNG Medical Ctr. (Korea, Republic of); Yeong Kyeong Seong, Kyoung-Gu Woo, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8670-65]

4:10 pm: **Neural network training by maximization of the area under the ROC curve: application to characterization of masses on breast ultrasound as malignant or benign**, Berkman Sahiner, Xin He, Weijie Chen, U.S. Food and Drug Administration (USA); Heang-Ping Chan, Lubomir M. Hadjiiski, Univ. of Michigan Health System (USA); Nicholas A. Petrick, U.S. Food and Drug Administration (USA) . . . . . [8670-58]

4:30 pm: **Finding lesion correspondences in different views of automated 3D breast ultrasound**, Tao Tan, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Bram Platel, Fraunhofer MEVIS (Germany); Michael Hicks, Ritse M. Mann, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8670-59]

4:50 pm: **Computer-aided lesion diagnosis in B-mode ultrasound by border irregularity and multiple sonographic features**, Jong-Ha Lee, Yeong Kyeong Seong, Chu-Ho Chang, Samsung Advanced Institute of Technology (Korea, Republic of); Eun Young Ko, SAMSUNG Medical Ctr. (Korea, Republic of); Kyoung-Gu Woo, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8670-60]

5:10 pm: **A robust region-based active contour model with point classification for ultrasound breast tumor segmentation**, Zhihua Liu, Lidan Zhang, Haibing Ren, Ji-Yeun Kim, Samsung Advanced Institute of Technology (China) . . . . . [8670-61]

Conference 8671 continued  
Image-Guided Procedures, Robotic Interventions, and Modeling

Room: Fiesta 1-3

SESSION 12

Room: Fiesta 1-3 . . . . . Thu 3:30 pm to 5:10 pm

Novel Imaging, Procedures, and Devices

Session Chairs: **Maryam E. Rettmann**, Mayo Clinic (USA); **Guy Shechter**, Philips Medical Systems (USA)

3:30 pm: **Quantitative evaluation of treatment related changes on multi-parametric MRI after laser interstitial thermal therapy of prostate cancer**, Satish E. Viswanath, Case Western Reserve Univ. (USA); Dan Sperling, New Jersey Institute of Radiology (USA); Herbert Lepor, New York Univ. Langone Medical Ctr. (USA); Jurgen Futterer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Anant Madabhushi, Case Western Reserve Univ. (USA) . . . . . [8671-52]

3:50 pm: **A flexure-based wrist for needle-sized surgical robots**, Philip J. Swaney, Jessica Burgner, Robert J. Webster III, Vanderbilt Univ. (USA) . . . . . [8671-53]

4:10 pm: **Real-time 3D Fourier-domain optical coherence tomography guided microvascular anastomosis**, Yong Huang, Johns Hopkins Univ. (USA); Zuhair Ibrahim, Wei-Ping A. Lee, Gerald Brandacher, Johns Hopkins Univ. School of Medicine (USA) [8671-54]

4:30 pm: **Towards cone-beam CT thermometry**, Ming Li, Nadine Abi-Jaoudeh, Ankur Kapoor, National Institutes of Health (USA); Samuel Kadoury, Philips Research North America (USA); Sheng Xu, National Institutes of Health (USA); Niels Noordhoek, Alessandro Radaelli, Bart Carelsen, Philips Healthcare (Netherlands); Bradford J. Wood, National Institutes of Health (USA) . . . . . [8671-55]

4:50 pm: **Fast deformable registration for soft organs with large motion in HIFU treatment**, Edward X. Huang, The Hospital for Sick Children (SickKids) (Canada) . . . . . [8671-56]

Conference 8675 continued  
Ultrasonic Imaging, Tomography, and Therapy

Room: Fiesta 6

SESSION 10

Room: Fiesta 6 . . . . . Thu 3:30 pm to 5:30 pm

Elastography and Novel Applications

Session Chair: **Marvin M. Doyley**, Univ. of Rochester (USA)

3:30 pm: **Introducing nuclei scatterer patterns into histology-based intravascular ultrasound simulation framework**, Silvan Kraft, Technische Univ. München (Germany) and Technische Univ. München (Germany); Athanasios Karamalis, Technische Univ. München (Germany); Debdoot Sheet, Technische Univ. München (Germany) and Indian Institute of Technology Kharagpur - School of Medical Science and Technology (India); Enken Drecoll, Ernst J. Rummeny, Nassir Navab, Peter B. Noël, Amin Katouzian, Technische Univ. München (Germany) . . . . . [8675-32]

3:50 pm: **Model based assessment of vestibular jawbone thickness using high frequency 3D ultrasound micro-scanning**, Daniel Habor, Chair of Medical Engineering, RWTH Aachen (Germany); Sarah Neuhaus, RWTH Aachen (Germany); Thorsten Vollborn, Chair of Medical Engineering, RWTH Aachen (Germany); Stefan Wolfart, RWTH Aachen (Germany); Klaus Radermacher, Stefan Heger, Chair of Medical Engineering, RWTH Aachen (Germany) . . . . . [8675-33]

4:10 pm: **Nonlinear response of lipid-shelled microbubbles to coded excitation: implications for carotid imaging**, Himanshu Shekhar, Marvin M. Doyley, Univ. of Rochester (USA) . . . . . [8675-34]

4:30 pm: **Reconstructing the mechanical properties of coronary arteries from displacements measured with a synthetic aperture ultrasound imaging system**, Steven J. Huntzicker, Sanghamithra Korukonda, Marvin M. Doyley, Univ. of Rochester (USA) . . . . . [8675-35]

4:50 pm: **Preclinical study of synthetic aperture tissue harmonic imaging on in-vivo data**, Joachim H. Rasmussen, Martin C. Hemmsen, Technical Univ. of Denmark (Denmark); Signe S. Madsen, Peter M. Hansen, Michael B. Nielsen, Copenhagen Univ. Hospital (Denmark); Jørgen A. Jensen, Technical Univ. of Denmark (Denmark) . . . . . [8675-36]

5:10 pm: **A stochastic filtering approach to recover strain images from ultrasound elastography**, Minhua Lu, Shenzhen Univ. (China); Weifang Li, Wuhan Univ. of Science and Technology (China); Heye Zhang, Shenzhen Institute of Advanced Technology (China) . . . . . [8675-37]

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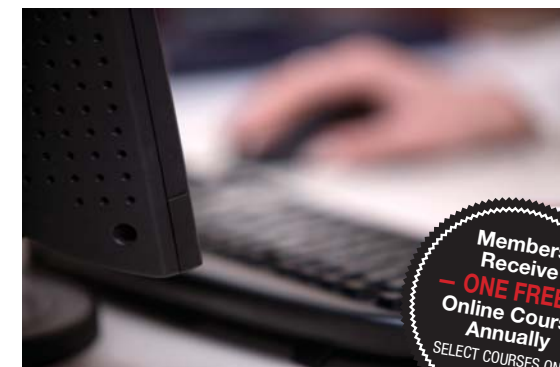
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## General Information

### Registration

Onsite Registration and Badge Pick-Up Hours  
South Registration Counter

Saturday 9 February	7:30 am to 4:00 pm
Sunday 10 February	7:15 am to 4:00 pm
Monday 11 February	7:30 am to 4:00 pm
Tuesday 12 February	7:30 am to 4:00 pm
Wednesday 13 February	7:30 am to 4:00 pm
Thursday 14 February	7:30 am to 1:30 pm

### Conference Registration

Includes admission to all conference sessions, plenaries, panels, poster sessions, coffee breaks, daily conference lunches, and a choice of proceedings. Student pricing includes Monday–Wednesday workshops and does not include proceedings.

### 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 poster sessions. Course prices include applicable taxes. Onsite, please go to Registration after you pick up your badge.

### SPIE Member, SPIE Student Member, and Student Pricing

- SPIE Members receive conference and course registration discounts. Discounts are applied at the time of registration.
- SPIE Student Members receive a 50% discount on all courses.
- Student registration rates are available only to undergraduate and graduate students who are enrolled full time and have not yet received their Ph.D. Post-docs may not register as students. A student ID number or proof of student status is required with your registration.

### Press Registration

For credentialed press and media representatives only. Please email contact information, title, and organization to [www.media@spie.org](mailto:www.media@spie.org).

### SPIE Cashier

Registration Area  
Open during registration hours

### Registration Payments

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, visit the SPIE Cashier.

### Receipts and Certificate of Attendance

Preregistered attendees who did not receive a receipt or attendees who need a Certificate of Attendance may obtain those from the SPIE Cashier at Registration.

### Badge Corrections

Badge corrections can be made by the SPIE Cashier. Please have your badge removed from the badge holder and marked with your changes before approaching the counter.

### Refund Information

There is a US\$40 service charge for processing refunds. Requests for refunds must be received by 31 January 2013; all registration fees will be forfeited after this date. Membership dues, reception tickets, and SPIE Digital Library subscriptions are not refundable.

### U.S. Government Credit Cards

U.S. Government credit card users: have your purchasing officer contact the credit card company and get prior authorization before attempting to register. Advise your purchasing agent that SPIE is considered a 5968 company for authorization purposes.

## Author / Presenter Information

### Speaker Check-In and Preview Station

Yucatan 3

Saturday . . . . . 1:00 to 5:00 pm  
Sunday through Thursday . . . . . 7:30 am to 5:00 pm

All conference rooms have a computer workstation, projector, screen, lapel microphone, and laser pointer. All presenters are requested to come to Speaker Check-In with their memory devices or laptops to confirm their presentation display settings.

### Poster Setup Instructions

Veracruz C

Two poster sessions are scheduled. See Poster Presentation Guidelines for additional information.

Poster authors are required to:

- Display the poster during morning coffee break of the first day of your session
- Attend the Interactive Poster Session to answer questions.

### Sunday/Monday Poster Session

*Poster presentations from the Image Processing; Biomedical Applications in Molecular, Structural, and Functional Imaging; Image Perception, Observer Performance, and Technology Assessment; and Digital Pathology conferences will be included.*

**Author Set-Up Time. . . . . Sunday after 12:00 pm**

Posters should remain on display until the end of the Interactive Poster Session on Monday.

**Interactive Poster Session and Reception:**

**Monday. . . . . 5:00 to 6:30 pm**

### Tuesday/Wednesday Poster Session

*Poster presentations from the Physics of Medical Imaging; Computer-Aided Diagnosis; Image-guided Procedures, Robotic Interventions, and Modeling; Advanced PACS-based Imaging Informatics, and Therapeutic Applications; and Ultrasonic Imaging, Tomography, and Therapy conferences will be included.*

**Author Set-Up Time. . . . . Tuesday after 9:40 am**

Posters should remain on display until the end of the Interactive Poster Session on Wednesday.

**Interactive Poster Session and Reception:**

**Wednesday. . . . . 5:30 to 7:00 pm**

**NOTE:** Extended poster viewing until 9:00 pm on all poster session days.

Poster award winners will be recognized and certificates distributed in the conference meeting rooms. Check conference schedules for times and locations. Ribbons will identify winning posters during the Interactive Poster Sessions.

## Attendee Services

### Internet/WiFi Access

#### Fiesta 7

Complimentary wired Internet access is available; attendees can hook up their laptops or use provided workstations. Complimentary wireless access is also available in common areas and foyers of the Convention Center.

Wireless internet access in sleeping rooms is complimentary.

### SPIE Bookstore

#### Monterey Foyer

The SPIE Bookstore is your source for the latest SPIE Press Books, Proceedings, and Education and Professional Development materials. Become an SPIE member, explore the Digital Library, and take home a free SPIE poster.

### Business Center

Convention Center, Northwest end by Acapulco.

7:00 am to 7:00 pm

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.

### Child Care Services

Kid's Nite Out provides in-room childcare at many Orlando area hotels and resorts and is the preferred childcare provider of the Walt Disney World Resort. They care for children ages 6 weeks to 12 years. Call 1-800-696-8105 or kidsniteout.com

SPIE does not imply an endorsement or recommendation of this service. It is provided on an "information only" basis for your further analysis and decision. Other services may be available.

### Urgent Message Line

An urgent message line is available during registration hours:

**(407) 939-2633.**

## Food + Beverage Services

### Coffee Breaks

Veracruz C · 9:40 am and 3:00 pm

Complimentary coffee will be served twice daily, at 9:40 am and 3:00 pm. Check individual conference listings for exact times and locations.

### Food & Refreshments for Purchase

Hours vary by location. Please check hours with the facility.

At Disney's Coronado Springs Resort, you will experience a culinary adventure that takes you from Latin-inspired foods to quick-service delicacies.

**Maya Grill** — Savor Nuevo Latino cuisine and classic American favorites at Maya Grill. This festive fusion restaurant is open for dinner and showcases Latin American flavors, culture and style.

**Cafe Rix** — Grab a quick bite; select from fresh salads, paninis and freshly baked goods.

**The Pepper Market** — Satisfy your appetite with American favorites at Pepper Market, offering buffet-style dining for breakfast and lunch, and a quick-service dining experience at dinner. Enjoy popular breakfast picks in the morning, and rotisserie chicken, pasta and burgers served later in the day.

**Siestas Cantina Pool Bar, Laguna Bar, Rix Lounge** — Enjoy these full service bars that are perfect for unwinding, imbibing your favorite drinks or sampling new ones.

### SPIE-Hosted Lunches

Veracruz B and Veracruz Porte Cochere

12:10 pm to 12:50 pm

SPIE-hosted lunches will be served Sunday through Thursday in the Veracruz B Ballroom and the Veracruz Porte Cochere. 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 can enter lunch ticket drawing on Sunday and Thursday at Registration before 10:00 am. Students may purchase lunch tickets for Sunday and Thursday 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.

## Travel/Transportation

### Car Rental

Hertz Car Rental has been selected as the official car rental agency for this Symposium. To reserve a car, identify yourself as an SPIE Medical Imaging Conference attendee using the Hertz Meeting Code CV# 029B0018. Note: When booking from International Hertz locations, the CV # must be entered with the letters CV before the number, i.e. **CV029B0018**.

- In the United States call 1-800-654-2240.
- In Canada call 1-800-263-0600, or 1-416-620-9620 in Toronto.
- In Europe and Asia call the nearest Hertz Reservation Center or travel agent.
- Outside of these areas call 1-405-749-4434.
- Book Hertz Online

### About Orlando

Orlando is the epicenter of fun and excitement, as more than 95 attractions keep visitors coming back for more. Take the mix of legendary theme parks, spectacular museums, world-class entertainment and blockbuster rides and attractions.

For more information about Orlando, visit their website: <http://www.orlandoinfo.com>

### Parking

Guest self parking is complimentary at Disney's Coronado Springs Resort. There is no valet parking. Complimentary Disney Shuttle is available from all Disney resorts to theme parks every 15 minutes, from 1 hour prior to parks opening to 1 hour after parks close.



## Policies

### Granting Attendee Registration and Admission

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### Misconduct Policy

SPIE is a professional, not-for-profit society committed to providing valuable conference and exhibition experiences. SPIE is dedicated to equal opportunity and treatment for all its members and meeting attendees. Attendees are expected to be respectful to other attendees, SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be asked to leave the event.

### Identification

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials.

Individuals are not allowed to pick up badges for attendees other than themselves. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

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By submitting an abstract, you agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the author registration rate, attend the meeting, and make the presentation as scheduled.
- A full-length manuscript (8-12 pages) for any accepted oral or poster presentation will be submitted for publication in the SPIE Digital Library, printed conference Proceedings, and CD. (Some SPIE events have other requirements that the author is made aware of at the time of submission.)
- Only papers presented at the conference and received according to publication guidelines and timelines will be published in the conference Proceedings and SPIE Digital Library (or via the requirements of that event).

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SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers.

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At SPIE events where wireless is included with your registration, SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

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Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

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For the health and consideration of all attendees, smoking is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

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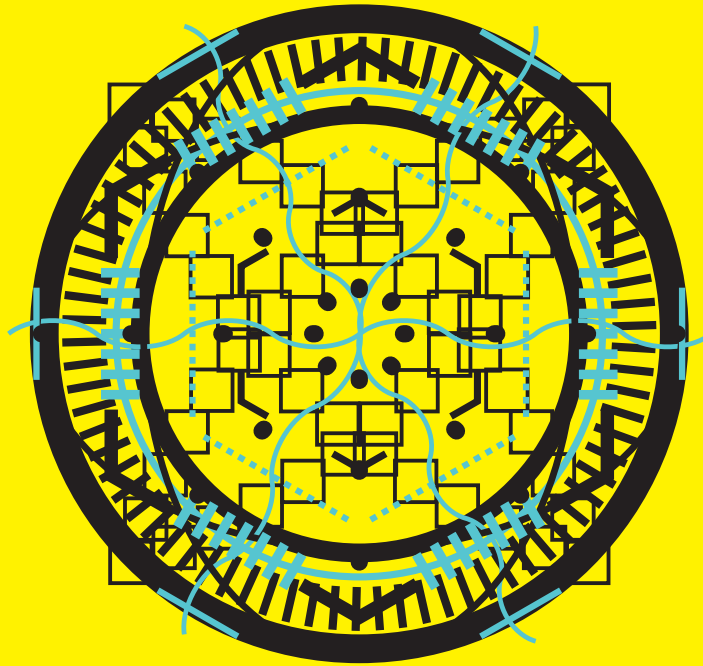
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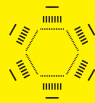
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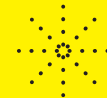
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