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2012 Medical Imaging

Technical Program

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CELEBRATING 40 YEARS SPIE Medical Imaging

Conference and Courses
4–9 February 2012

Location
Town & Country Resort and Convention Center
San Diego, California, USA

SPIE Medical Imaging

Conferences and Courses:
4–9 February 2012
Town & Country Hotel and Convention Center
San Diego, California, USA

Cooperating Organizations:

- American Association of Physicists in Medicine
- Computer Assisted Radiology and Surgery
- Medical Image Perception Society
- Radiological Society of North America
- The American Physiological Society
- The DICOM Standards Committee
- Society for Imaging Informatics in Medicine
- The Society for Imaging Science & Technology
- World Molecular Imaging Society

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Welcome to San Diego

CELEBRATING 40 YEARS SPIE Medical Imaging

Celebrating 40 years and counting as SPIE remains the current source for innovative medical imaging technology.

Welcome to the premier event for innovations in imaging—physics, image and signal processing, CAD, biomedical modeling, visualization, quantitative use of medical images, and more. Hear the work, network with leaders in the fields, and see the applications of the future.

SPIE Medical Imaging is the place where collaboration brings ideas to life and technology to market.

We welcome you to San Diego for this premier event.

Symposium Chairs

Joseph M. Reinhardt
The Univ. of Iowa (USA)

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

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

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Technical Conferences

General Information

2012 Student Paper Awards Conference Finalists

Congratulations Conference Finalists

The following student authors will advance to the final round of the Best Student Paper competition. Their papers were chosen from 29 submissions.

Physics of Medical Imaging (8313)

Raymond J. Acciavatti, The Univ. of Pennsylvania Health System (USA)
Optimization of continuous tube motion and step-and-shoot motion in digital breast tomosynthesis systems with patient motion [8313-5]

Image Processing (8314)

Ryan D. Datteri, Vanderbilt Univ. (USA)
Estimation of rigid-body registration quality using registration networks [8314-44]

Alexander Schmidt-Richberg, Univ. zu Lübeck (Germany)
Pulmonary lobe segmentation with level sets [8314-103]

Computer-Aided Diagnosis (8315)

Andrei Chekkoury, Siemens Corporate Research (USA)
Automated malignancy detection in breast histopathological images [8315-40]

Image-Guided Procedures, Robotic Interventions, and Modeling (8316)

Zahra Shirzadi, The Univ. of Western Ontario (Canada)
Lung tumor motion prediction during lung brachytherapy using finite element model [8316-17]

Fitsum A. Reda, Vanderbilt Univ. (USA)
Automatic preoperative to intraoperative CT registration for image-guided cochlear implant surgery [8316-49]

Biomedical Applications in Molecular, Structural, and Functional Imaging (8317)

Mohammadreza Negahdar, Univ. of Louisville (USA)
A 3D optical flow technique based on mass conservation for deformable motion estimation from 4D CT images of the lung [8317-50]

Advanced PACS-based and Imaging Informatics and Therapeutic Applications (8319)

Taiki Magome, Kyushu Univ. (Japan)
Computer-assisted radiation treatment planning system for determination of beam directions based on similar cases in a database for stereotactic body radiotherapy [8319-23]

Monday 6 February · 4:00 to 5:00 pm · Room: Town & Country

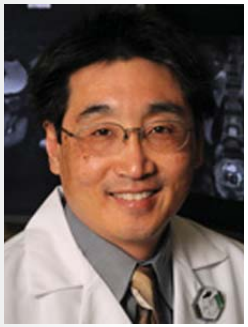
Student Paper Awards

Join us for the recognition of the conference finalists and an announcement of the first place winner and runner up.

Session Chairs:

Joseph M. Reinhardt
The Univ. of Iowa (USA)

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



Re-Engineering Medical Imaging in an Electronic and Flattened World: Meaningful Innovation and Translation

Paul J. Chang, M.D.
University of Chicago School of Medicine
University of Chicago Hospitals

Abstract: The successful translation of medical imaging innovation into clinical practice has clearly been an important contributor to improvements in efficiency, diagnostic accuracy, and therapeutic outcomes. However, an explosion in rising expectations and requirements in an increasingly complex health care environment with decreasing resources requires significant improvements in the translation of medical imaging research into the clinical environment. Unfortunately, current research translation and integration of innovative advances into clinical practice has frequently been suboptimal and has failed to maximally leverage these innovations. There is a great need for a more agile, aggressively collaborative relationship amongst investigators, clinicians, IT, and industry partners in order to provide the solutions necessary to truly add measurable improvements in efficiency, quality, and safety and to avoid the increasing risk of marginalization and commoditization of medical imaging. Improved models for collaboration and integration will be required to more efficiently provide "meaningful" innovation and translation.

Biography: **Dr. Chang** is Professor and Vice-Chairman of Radiology Informatics and Medical Director of Pathology Informatics at the University of Chicago School of Medicine. Dr. Chang is also Medical Director of Enterprise Imaging and the Informatics Architect for the Service Oriented Architecture (SOA) initiative at the University of Chicago Hospitals.

Dr. Chang was the founder and director of the Division of Radiology Informatics at the University of Pittsburgh Medical Center (UPMC). The UPMC digital image management infrastructure supported over 1.3 million clinical studies per year from 19 physically distributed hospitals/ facilities throughout Western Pennsylvania. This image management infrastructure also supported cardiac and visible light (ophthalmology, dermatology, and pathology) images as well as numerous large-scale multi-institutional research trials.

Dr. Chang is active in numerous research and development projects related to imaging informatics as well as enterprise-wide informatics integration issues. He is a recognized expert in the field of imaging informatics. His work in workstation design has resulted in presentation and navigation models that have been adopted by most PACS vendors. A novel lossless wavelet-based image distribution mechanism, dynamic transfer syntax (DTS), was co-invented by Dr. Chang; this technology was subsequently commercialized by the creation of Stentor PACS, which was acquired by Philips Medical Systems. This PACS system is used by several hundred hospitals worldwide and is a world-wide leader in market share.

Current informatics initiatives at the University of Chicago under Dr. Chang's leadership include 1) the development of a robust SOA-based Enterprise Service Bus (ESB) that provides web-services access to clinical information to allow the creation of customized clinical and research applications; 2) an ambitious "closed loop imaging" infrastructure that establishes interoperability across information systems, including modalities, to improve efficiency and quality in image acquisition, interpretation, and results delivery/ acknowledgement; and 3) a digital anatomic pathology workflow engine that includes specimen tracking and imaging.

Dr. Chang received his B.A. from Harvard University and his M.D. degree from Stanford University. Concurrent with his medical school training, he also received his M.S. degree in Engineering-Economic Systems from Stanford. Dr. Chang completed his residency and fellowship training in Diagnostic Radiology at Stanford University Hospital.

Digital Pathology

Thursday 9 February · 8:00 am to 12:10 pm · Room: Golden West

Don't miss the Joint Session with conferences:

8314: Image Processing,

8315: Computer-Aided Diagnosis, and

8318: Image Perception, Observer Performance, and Technology Assessment

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Thank you to the Digital Pathology Planning Committee:

Metin Gurcan, The Ohio State Univ. Medical Ctr. (USA)

David Haynor, Univ. of Washington (USA)

Anant Madabhush, Rutgers, The State Univ. of New Jersey (USA)

Claudia Mello-Thoms, Univ. of Pittsburgh Cancer Institute (USA)

Carol Novak, Siemens Corporate Research (USA)

Bram van Ginneken, Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

Digital Pathology I · 8:00 to 9:40 am

8:00 am · [8318-22]

Pathology: why the future of medicines gold standard is to go digital

Michael Becich, Univ. of Pittsburgh (USA)

9:00 am · [8315-40]

Automated malignancy detection in breast histopathological images

Andrei Chekkoury, Parmeshwar K. Khurd, Jie Ni, Claus Bahlmann, Ali Kamen, Amar Patel, Leo Grady, Siemens Corporate Research (USA); **Elizabeth A. Krupinski,** The Univ. of Arizona (USA); **Jeffrey P. Johnson,** Siemens Corporate Research (USA); **Anna R. Graham, M.D., Ronald S. Weinstein M.D.,** The Univ. of Arizona (USA)

9:20 am · [8314-59]

Robust alignment of prostate histological slices with quantified precision

Cecilia Hughes, INSERM, U1032 (France) and CREATIS, CNRS UMR 5220, INSERM U1044, (France) and Univ. Lyon 1 (France); **Olivier Rouviere,** Hospices Civils de Lyon (France) and Inserm, U1032 (France); **Florence Mege Lechevallier,** Hospices Civils de Lyon (France); **Rémi Souchon,** Inserm, U1032, (France); **Rémy Prost,** CREATIS-LRMN INSA (France)

9:40 to 10:10 am · Coffee Break

Digital Pathology II · 10:10 am to 12:10 pm

10:10 am · [8315-41]

Follicular lymphoma grading using cell-graphs and multiscale feature analysis

Basak Oztan, Rensselaer Polytechnic Institute (USA); **Hui Kong, Metin Gurcan,** The Ohio State Univ. Medical Ctr. (USA); **Bulent Yener,** Rensselaer Polytechnic Institute (USA)

10:30 am · [8318-23]

Analysis of slide exploration strategy of cytologists when reading virtual slides

Liron Pantanowitz M.D., Anil V. Parwani M.D., Eugene Tseytlin, Claudia R. Mello-Thoms, Univ. of Pittsburgh Cancer Institute (USA)

10:50 am · [8314-60]

Reconstruction of incomplete cell paths through a 3D-2D level set segmentation

Maia Hariri, Justin W. L. Wan, Univ. of Waterloo (Canada)

11:10 am · [8315-42]

Nucleus fingerprinting for the unique identification of Feulgen-stained nuclei

David Friedrich, RWTH Achen (Germany); **Matthias Brozio, André A. Bell,** RWTH Aachen (Germany); **Stefan F. Biesterfeld M.D., Alfred Böcking,** Heinrich-Heine-Univ. Düsseldorf (Germany); **Til Aach,** RWTH Aachen (Germany)

11:30 am · [8318-24]

Influence of LCD color reproduction accuracy on observer performance using virtual pathology slides

Elizabeth A. Krupinski, The Univ. of Arizona (USA); **Louis D. Silverstein,** Vcd Sciences Inc (USA); **Syed F. Hashmi, Anna R. Graham, Ronald S. Weinstein, Hans Roehrig,** The Univ. of Arizona (USA)

11:50 am · [8318-25]

Compressing virtual pathology slides: human and model observer evaluation

Elizabeth A. Krupinski, The Univ. of Arizona (USA); **Jeffrey P. Johnson,** Siemens Corporate Research (USA); **Stacey Jaw, Anna R. Graham, Ronald S. Weinstein,** The Univ. of Arizona (USA)

Daily Event Schedule

Saturday — 4 February

SC086 **Fundamentals of Medical Image Processing and Analysis** (Deserno) 8:30 am to 5:30 pm

SC471 **Principles and Advancements in X-ray Computed Tomography** (Hsieh) 8:30 am to 12:30 pm

SC1025 **Statistics of Medical Imaging** (Lei) 8:30 am to 5:30 pm

SC829 **MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU)** (Mueller, Zheng, Papenhausen) 1:30 to 5:30 pm

SC1064 **Radiation Dose in CT** (McNitt-Gray) 1:30 to 5:30 pm, p. 51
NEW

SC987 **Spectral CT Imaging** (Heismann, Schmidt, Flohr) 1:30 to 5:30 pm

WS776 **Writing for Publication in Medical Imaging** (Hanson) 1:30 to 5:30 pm

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Sunday — 5 February

KEYNOTE PRESENTATION:
8313 **Mammography screening: its benefits, risks, and continuing controversy** (Hendrick) 8:00 to 9:00 am, p. 8

SC1063 **Diffusion Imaging** (Klein, Schultz) 8:30 am to 12:30 pm
NEW

WS757 **Early Career Professional Development in Medical Imaging** (Krupinski) 8:30 am to 12:30 pm

8313 **Physics of Medical Imaging** (Pelc, Nishikawa) p. 16

8316 **Image-Guided Procedures, Robotic Interventions, and Modeling** (Holmes, Wong) p. 16

8317 **Biomedical Applications in Molecular, Structural, and Functional Imaging** (Molthen, Weaver) p. 16

8320 **Ultrasonic Imaging, Tomography, and Therapy** (Bosch, Doyley) p. 17

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8316 **Medical robotics and computer-integrated inverventional medicine** (Taylor) 1:20 to 2:20 pm, p. 8

SC1065 **Exploring Brain Connectivity In-vivo: From Theory to Practice** (Pujol, Styner, Gerig) 1:30 to 5:30 pm
NEW

SC1026 **Graph Algorithmic Techniques for Biomedical Image Segmentation** (Garvin) 1:30 to 5:30 pm

SC358 **X-Ray Detector Performance: Principles and Measurements using a Linear Systems Approach** (Cunningham) 1:30 to 5:30 pm

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WS1024 **Medical Imaging: From Concept to Market** (Analoui) 1:30 to 5:30 pm

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8316 **Regulatory Changes and New Opportunities in Biomedical Device Development**
8317 **Open Source Software Tools for Lung Image Analysis** (Tustison)
The NIH Grants Process

Monday — 6 February

KEYNOTE PRESENTATION:
8320 **Integration of 3D intraoperative ultrasound for enhanced neuronavigation?** (Paulsen) 10:10 to 11:10 am, p. 9

8314 **Image Processing** (Haynor, Ourselin) p. 16

Meet the NIH Staff, 9:00 to 11:00 am, p. 13

KEYNOTE PRESENTATION:
8314 **Imaging science and cardiology the heart of a good partnership** (Razavi)1:20 to 2:20 pm, p. 8

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Student Paper Awards
Plenary Presentation:
Re-Engineering Medical Imaging in an Electronic and Flattended World: Meaningful Innovation and Translation (Chang)

Interactive Poster Session and Reception, 5:00 to 6:30 pm, p. 12

Dessert with the Experts— *A Student Networking Event,* 6:30 to 7:30 pm, p. 13

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8315 **Automated detection of retinal disease: when Moore's law meets Baumol's cost disease** (Abramoff) 8:00 to 9:00 am, p. 8

KEYNOTE PRESENTATION:
8317 **Hyperpolarized-gas MRI of the lung: Can research potential translate to clinical application** (Mugler) 10:10 to 11:10, p. 9

8315 **Computer-Aided Diagnosis** (van Ginneken, Novak) p. 16

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8319 **DICOM** (Horii), 5:00 to 6:30 pm
8313 and 8318 · 5:00 to 7:00 pm, **Evaluating Image Quality Performance in CT** (Abbey, Hoeschen, Kyprianou)

Wednesday — 8 February

8318 **Image Perception, Observer Performance, and Technology Assessment** (Abbey, Mello-Thoms) p. 17

8319 **Advanced PACS-based Imaging Informatics and Therapeutic Applications** (Boonn, Liu) p. 17

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40th Anniversary Celebration
3:00 to 3:50 pm, p. 13

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Thursday — 9 February

KEYNOTE PRESENTATION:
8318 **Pathology: why the future of medicines gold standard is to go digital** (Becich) 8:00 to 9:00 am am, p. 9

SPECIAL SESSION:
Digital Pathology, 8:00 am to 12:10 pm, p. 9

Daily Conference Session Schedule

TIME	Conference 8313	Conference 8314	Conference 8315	Conference 8316	Conference 8317	Conference 8318	Conference 8319	Conference 8320
SUNDAY · 5 February								
Sun. 8:00 to 9:40 am	SESSION 1: **Keynote and 3D Breast Imaging**			SESSION 1: **Visualization, Segmentation, and Registration**	SESSION 1: **Functional Magnetic Resonance Imaging**			SESSION 1: **Ultrasound Computer Tomography: Novel Technology**
9:40 to 10:10 am	Coffee Break							
10:10 am to 12:10 pm	SESSION 2: **3D Breast Imaging**			SESSION 2: **Tracking and Radiation Therapy**	SESSION 2: **Magnetic Resonance Imaging of Brain Structure and Function**			SESSION 2: **Ultrasound Image Processing**
12:10 to 1:20 pm	Lunch Break							
1:20 to 3:00 pm	SESSION 3: **Breast Multi-Energy/ Photon Counting**			SESSION 3: **Keynote and Robotics**	SESSION 3: **Cardiovascular Hemodynamics and Biomechanics**			SESSION 3: **Novel Beamforming Approaches**
3:00 to 3:30 pm	Coffee Break							
3:30 to 5:30 pm	SESSION 4: **Mammography**			SESSION 4: **Simulation and Modeling**	SESSION 4: **Image Segmentation and Morphological Analysis**			SESSION 4: **Clinical Applications and Diagnostics**
5:45 to 7:45 pm	**Technical Workshops**							
MONDAY · 6 February								
Mon. 8:00 to 9:40 am	SESSION 5: **X-Ray Imaging**	SESSION 1: **Segmentation I**		SESSION 5: **2D/3D and Fluoroscopy**	SESSION 5: **Nano-Scale Sensing, Therapy, and Imaging**			SESSION 5: **Ultrasound Computer Tomography: Application**
9:40 to 10:10 am	Coffee Break							
10:10 am to 12:10 pm	SESSION 6: **Small Animal Imaging**	SESSION 2: **Registration I**		SESSION 6: **Keynote and Ultrasound** Joint Session with 8320: Ultrasonic Imaging, Tomography, and Therapy	SESSION 6: **Brain Function, Pathophysiology, and Neural Connectivity**			SESSION 6: **Keynote and Ultrasound Guided Procedures** Joint Session with Conference 8316: Image-guided Procedures, Robotic Interventions, and Modeling
12:10 to 1:20 pm	Lunch Break							
1:20 to 3:40 pm	SESSION 7: **Photon Counting Systems and Techniques**	SESSION 3: **Keynote and Cardiac Applications**		SESSION 7: **Optical, Laparoscopic, and Needle Techniques**	SESSION 7: **Optical Imaging and Analysis of Tissue, Cells, and Biological Samples**			SESSION 7: **Ultrasound Functional Imaging**
3:40 to 4:00 pm	Coffee Break							Poster Award Announcements
4:00 to 5:00 pm	**Best Student Paper Awards and Plenary Presentations**							
5:00 to 6:30 pm		**Sunday/Monday Poster Session**		**Sunday/Monday Poster Session**	**Sunday/Monday Poster Session**			**Sunday/Monday Poster Session**

Daily Conference Session Schedule

TIME	Conference 8313	Conference 8314	Conference 8315	Conference 8316	Conference 8317	Conference 8318	Conference 8319	Conference 8320
TUESDAY · 7 February								
Tues. 8:00 to 9:40 am	SESSION 8: **General Radiography and Fluoroscopy**	SESSION 4: **Diffusion Imaging**	SESSION 1: **Keynote and Digital Pathology**	SESSION 8: **Prostate**	SESSION 8: **Skeletal and Bone Microstructure: Analysis and Assessment**			
9:40 to 9:45 am		Poster Award Announcements		Poster Award Announcements	Poster Award Announcements			
9:40 to 10:10 am	Coffee Break							
10:10 am to 12:10 pm	SESSION 9: **Cone Beam CT**	SESSION 5: **Shape: Applications and Methods**	SESSION 2: **Breast**	SESSION 9: **Cardiac and Vascular**	SESSION 9: **Keynote and Hyperpolarized-Gas Magnetic Resonance Imaging and Analysis**			
12:10 to 1:20 pm	Lunch Break							
1:20 to 3:00 pm	SESSION 10: **CT**	SESSION 6: **Segmentation II**	SESSION 3: **Oncology**	SESSION 10: **Neuro and Head**	SESSION 10: **Lung Imaging and Motion Registration**			
3:00 to 3:30 pm	Coffee Break							
3:30 to 4:50 pm	SESSION 11: **CT Detection Performance**	SESSION 7: **Label Fusion**	SESSION 4: **Abdomen**	SESSION 11: **Lung and Liver**	SESSION 11: **Imaging and Analysis of Breast and Thoracic Tissue**			
5:00 to 7:00 pm	**Technical Workshops**							
WEDNESDAY · 8 February								
Wed. 8:00 to 9:40 am	SESSION 12: **Dose**	SESSION 8: **Brain Applications**	SESSION 5: **Vascular**			SESSION 1: **Technology Assessment**		
9:40 to 10:10 am	Coffee Break							
10:10 am to 12:10 pm	SESSION 13: **Reconstruction I**	SESSION 9: **Registration II**	SESSION 6: **Lung**			SESSION 2: **Image Display**		
12:10 to 1:20 pm	Lunch Break							
1:20 to 3:00 pm	SESSION 14: **Tomosynthesis Reconstruction**	SESSION 10: **OCT and Ultrasound**	SESSION 7: **Colon**			SESSION 3: **ROC Analysis**	SESSION 1: **PACS 30th Anniversary Session**	
3:00 to 3:50 pm	40th Anniversary Celebration							
3:50 to 5:30 pm	SESSION 15: **Reconstruction II**	SESSION 11: **Segmentation of Vessels and Tubular Structures**	SESSION 8: **Musculoskeletal**			SESSION 4: **Image Perception**	SESSION 2: **Cloud and Mobile Computing**	
5:30 to 7:00 pm	**Tuesday/Wednesday Poster Session**		**Tuesday/Wednesday Poster Session**			**Tuesday/Wednesday Poster Session**	**Tuesday/Wednesday Poster Session**	

TIME	Conference 8313	Conference 8314	Conference 8315	Conference 8316	Conference 8317	Conference 8318	Conference 8319	Conference 8320
THURSDAY · 9 February								
Thurs. 8:00 to 9:40 am		SESSION 12: **Digital Pathology I** Joint Session with 8315: Computer-Aided Diagnosis and 8318: Image Perception, Observer Performance, and Technology Assessment	SESSION 9: **Digital Pathology I** Joint Session with 8314: Image Processing and 8318: Image Perception, Observer Performance, and Technology Assessment			SESSION 5: **Digital Pathology I** Joint Session with 8314: Image Processing and 8315: Computer-Aided Diagnosis	SESSION 3: **Data Mining I**	
9:40 to 9:45 am			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: **Digital Pathology II** Joint Session with 8315: Computer-Aided Diagnosis and 8318: Image Perception, Observer Performance, and Technology Assessment	SESSION 10: **Digital Pathology II** Joint Session with 8314: Image Processing and 8318: Image Perception, Observer Performance, and Technology Assessment			SESSION 6: **Digital Pathology II** Joint session with 8314: Image Processing and 8315: Computer-Aided Diagnosis	SESSION 4: **PACS/ Systems Integration**	
11:30 am to 12:10 pm								
12:10 to 1:20 pm	Lunch Break							
1:20 to 3:00 pm			SESSION 11: **Novel Applications**			SESSION 7: **Model Observers**	SESSION 5: **Data Mining II**	
3:00 to 3:30 pm	Coffee Break							
3:30 to 5:30 pm			SESSION 12: **Cardiac and Neuro**			SESSION 8: **Observer Performance**	SESSION 6: **Therapy**	

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

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

Physics of Medical Imaging
Conference 8313

Sunday, 8:00 to 9:00 am
Room: Town & Country

Mammography screening: its benefits, risks, and continuingcontroversy [8313-01]

R. Edward Hendrick
Univ. of Colorado Denver School of Medicine (USA)

Screening mammography is one of the most studied medical exams, yet its remains highly controversial. Proponents of screening mammography point out that both randomized controlled trials and service screening results demonstrate a statistically significant mortality benefit from regular screening mammography of women starting at age 40. Proponents also note that early detection of breast cancer also reduces the cost and morbidity of treatment. Critics of screening mammography, on the other hand, emphasize its risks, including false positive exams, recalls for follow-up exams, biopsies of non-cancerous lesions, overdiagnosis, missed breast cancers, and radiation-induced breast cancers. This talk compares the benefits and risks of screening mammography, discusses the controversial 2009 United States Preventive Services Task Force (USPSTF) recommendations for screening, and presents newer results that call these recommendations into question. The talk also discusses the highly polarized politics of screening mammography, the effect of the screening debate on new technologies, and the number of women's lives that are affected by this devastating disease.

Biography: **R. Edward Hendrick, Ph.D.,** is Clinical Professor of Radiology at the University of Colorado - Denver, School of Medicine. A board-certified diagnostic medical physicist, he helped establish the American College of Radiology's Mammography, MRI, Stereotactic Breast Biopsy, and Breast MRI Accreditation Programs and helped define ACR and FDA federal standards for mammography equipment and quality control. He was the lead of the American College of Radiology's Mammography Quality Control Manuals, a charter member of the FDA's Mammography Quality Assurance Advisory Committee, PI on the first clinical trial of digital mammography, and co-PI on the NCI-sponsored ACRIN DMIST trial of digital mammography.

Image Processing
Conference 8314

Monday, 1:20 to 2:20 pm
Room: San Diego

Imaging science and cardiology the heart of a good partnership [8314-12]

Reza Razavi
King's College London (United Kingdom)

Imaging has developed into an essential part of the management of patients with cardiovascular disease. Application of new and innovative imaging applications continues to move this field forward both for better diagnosis and characterization of patients to plan treatments, and in using imaging to guide therapy to get the optimal outcomes. The advances in this area require the close collaboration between the biomedical engineers, physicists and computer scientists who are developing the algorithms and tools, and clinicians who identify the clinical challenges and translate the tools to improve patient care. In this presentation I will illustrate in three examples how this close partnership has been effective in work that I have been involved in over the last 10 years, for patients with congestive heart failure, heart rhythm abnormalities and congenital heart disease. I will also set out some of the challenges that I think will be important to address in the next 10 years where imaging can continue to have major impact in improving the care of patients with cardiovascular disease.

Biography: **Professor Reza Razavi** heads the Division of Imaging Sciences and Biomedical Engineering at King's College London and is an Honorary Consultant in Paediatric Cardiology at Guy's and St Thomas' Hospital NHS Foundation Trust. He is also Director of the KCL Medical Engineering Centre of Excellence funded by the Wellcome Trust and EPSRC.

Prof. Razavi leads the Imaging and Biomedical Engineering clinical academic group at King's Health Partners, an academic health sciences centre which delivers health care to patients and undertakes health-related science and research.

The main focus of Prof. Razavi's research is cardiac MRI particularly in relation to congenital heart disease, XMR (X-ray and MRI) guided cardiac catheterisation and methodological advances to move to faster 3-Dimensional cardiac imaging.

His research group at KCL was the first to perform MRI guided cardiac catheterisation in patients and to use XMR in radio-frequency ablation of arrhythmias as well as catheter guided interventions in congenital heart disease.

Computer-Aided Diagnosis
Conference 8315

Tuesday, 8:00 to 9:00 am
Room: Royal Palms I-III

Automated detection of retinal disease: when Moore's law meets Baumol's cost disease [8315-01]

Michael Abramoff
Univ. of Iowa Hospitals and Clinics (USA)

Over the last 40 years, health care expenditures have been outpacing wage increases in all other areas of the economy, around the developed world. While all other sectors of the economy showed consistent productivity gains since at least 1900, physician's and nurses productivity has been generally flat. This paradox was first described by W.J. Baumol in 1966, and has since been called Baumol's cost disease.

You are probably more familiar with Moore's law, the doubling of transistor density on integrated circuits every two years, which has led to sustained increases in processing power and memory capacity. Moore's law has resulted in cost-effective productivity increases in most areas of the economy through automation. In health care however, the introduction of Electronic Health Records, though potentially improving quality of health care, is resulting in lower physician productivity. Computer Aided Diagnosis, where the physician is assisted by a computer, may suffer from the same problem. In other words, health care automation has made physicians maybe do better but not more.

Automated detection of retinal diseases, leveraging Moore's law and sophisticated image analysis algorithms, can be employed real time, at the point of care, without requiring a physician, and has been shown to outperform retinal specialists on several measures. Thus, to for example prevent blindness in the 300 million people with diabetes around the world at risk for diabetic retinopathy, automated detection seems an obvious choice.

This talk will give my personal view on the state of the art in retinal image analysis, after which I will attempt to predict the outcome of 'Moore vs Baumol'.

Biography: **Dr. Abramoff** is Associate Professor of Ophthalmology and Visual Sciences with joint appointments in Electrical and Computer Engineering and Biomedical Engineering at the University of Iowa, Iowa City. He is a fellowship trained retinal specialist (MD, University of Amsterdam, Netherlands) with a PhD in image analysis in ophthalmology (University of Utrecht, The Netherlands). He serves on the American Academy of Ophthalmology and the Iowa Medical Society, and is Associate Editor of IEEE TMI. When he is not seeing patients with retinal disease or teaching medical students, graduate students, postdocs, residents and fellows, he oversees a highly successful retinal image analysis research program. His focus is on automated early detection of retinal diseases, image guided therapy of retinal disease, and computational phenotype-genotype association discovery. He has over 130 publications, seven patents and patent applications in this field, and is founder of the EyeCheck and Iowa Retinal Telediagnosis projects, as well as IDx LLC.

Image-Guided Procedures, Robotic Interventions, and Modeling
Conference 8316

Sunday, 1:20 to 2:20 pm
Room: California

Medical robotics and computer-integrated interventional medicine [8316-12]

Russell H. Taylor
The Johns Hopkins Outpatient Ctr. (USA)

This talk will discuss ongoing research at the JHU Engineering Research Center for Computer-Integrated Surgical Systems and Technology (CISST ERC) to develop systems that combine innovative algorithms, robotic devices, imaging systems, sensors, and human-machine interfaces to work cooperatively with surgeons in the planning and execution of surgery and other interventional procedures. This talk will describe past and emerging research themes and illustrate them with examples drawn from our current research activities in medical robotics and computer-integrated interventional systems.

Biography: **Russell H. Taylor** received his Ph.D. in Computer Science from Stanford in 1976. He joined IBM Research in 1976, where he developed the AML robot language and managed the Automation Technology Department and (later) the Computer-Assisted Surgery Group before moving in 1995 to Johns Hopkins, where he is a the John C. Malone Professor of Computer Science with joint appointments in Mechanical Engineering, Radiology, and Surgery and is also Director of the Engineering Research Center for Computer-Integrated Surgical Systems and Technology (CISST ERC). He is the author of over 250 peer-reviewed publications, a Fellow of the IEEE, of the AIMBE, of the MICCAI Society, and of the Engineering School of the University of Tokyo. He is also a recipient of numerous awards, including the IEEE Robotics Pioneer Award, the MICCAI Society Enduring Impact Award, and the Maurice Müller Award for Excellence in Computer-Assisted Orthopaedic Surgery.

Automated detection of retinal disease: when Moore's law meets Baumol's cost disease (continued)

Biomedical Applications in Molecular, Structural, and Functional Imaging
Conference 8317

Tuesday, 10:10 to 11:10 am
Room: Golden West

Hyperpolarized-gas MRI of the lung: Can research potential translate to clinical application? [8317-44]

Dr. John Mugler III
Univ. of Virginia (USA)

The exceptionally-high magnetic-resonance signal provided by hyperpolarized noble gases, such as helium-3 and xenon-129, permits direct, high-resolution MRI of the airspaces of the lung. Combining this high signal with the inherent flexibility of MRI has resulted in an arsenal of techniques that offer a wealth of regional information on the functional status and structure of the healthy and diseased lung. No other medical-imaging modality can provide comparable information about the lung, which is of particular relevance considering the growing need to address the global impact of pulmonary diseases, such as asthma and chronic obstructive pulmonary disease, on health and quality of life.

Despite this impressive and unique potential, which has been amply demonstrated through a wide-range of research studies in animals and humans, hyperpolarized-gas MRI has yet to translate to a clinical imaging tool. Although an outside observer of the field may conclude that lack of translation means lack of sufficient added-value to the evaluation of pulmonary diseases, the true reason is rooted in practical and technical issues, not ultimate potential. On the practical side, commercial and patent issues have blocked widespread dissemination of hyperpolarized-gas technology since the late 1990s. On the technical side, improved image-analysis approaches are needed to distill imaging results into robust metrics for diagnostic or therapeutic decision making. Recent developments on both the commercial and technical fronts provide optimism that it will soon be possible to move hyperpolarized-gas MRI of the lung beyond a handful of academic centers, allowing the true value of this exciting technology for the treatment and monitoring of pulmonary diseases to be assessed.

Biography: **John P. Mugler, III, Ph.D.,** is a Professor of Radiology & Medical Imaging, and Professor of Biomedical Engineering, at the University of Virginia. He has been an active researcher in human applications of MRI for 25 years, focusing on the development and application of techniques for imaging the lung using hyperpolarized noble gases, and on the development and optimization of pulse sequences for three-dimensional anatomical imaging. As Co-Director of the Center for In-Vivo Hyperpolarized Gas MR Imaging at the University of Virginia, he is the lead pulse-sequence developer for a team of researchers who have made pioneering contributions to hyperpolarized-gas imaging of the lung, including the first hyperpolarized-xenon images of the human lung in 1996.

Image Perception, Observer Performance, and Technology Assessment
Conference 8318

Thursday, 8:00 to 9:00 am
Room: California

Pathology: Why the future of medicine's fold standard is to go digital [8318-22]

Michael Becich
Univ. of Pittsburgh (USA)

Abstract: Pathology is one of the oldest specialties of Medicine, and the investigations on the underlying causes of disease can be traced back to the XI century. The first optical microscope was only created centuries later, around 1590, but it took almost another 100 years before it became the centerpiece for the study of disease processes. Today, the optical microscope still reigns supreme in the clinical practice, and the diagnoses made under its lenses are considered the "gold standard" in Medicine. However, the demands facing pathologists are greater than ever, with an aging population, a growing number of diagnostic procedures available to clinicians, and a litigation-prone society. How can pathologists improve their processes, reduce variability and safeguard themselves (by consulting on difficult cases) if they still have to rely on glass slides? In this talk we will discuss Pathology's migration towards a digital environment: why it is necessary, unavoidable, and may be quite painful, if care is not taken in training personnel not to see the digital microscope as a "digital" version of the optical microscope. We will discuss the many new opportunities that will be opened up by the conversion to a digital environment, such as teleconsulting; digital slide storage; and development of computer-aided diagnostic systems. We will also review the many challenges that lie ahead: image storage, retrieval and transmission; appropriate uses of the digital microscope; and securing FDA approval for Whole Slide Imaging devices.

Biography: **Dr Michael Becich, MD, PhD,** is Professor and Chairman of the Department of Biomedical Informatics at the University of Pittsburgh School of Medicine. He is jointly appointed in Pathology, Information Sciences/Telecommunications and Clinical/Translational Research. He is Associate Director of the University of Pittsburgh Cancer Institute as well as the Clinical and Translational Science Institute. His research interests are focused on the interface between clinical informatics and bioinformatics. His research is funded by the CDC, DOC, NCI, NCRR, NLM and TATRC and includes clinical phenotyping of patients for genome wide association studies/next generation sequencing, tissue banking informatics, clinical informatics and bioinformatics with a special emphasis on data sharing. For a full research profile see http://researchgateway.ctsi.pitt.edu/dvprofiles/becich.

Advanced PACS-based Imaging Informatics, and Therapeutic Applications
Conference 8319

Room: Golden West

PACS 30TH ANNIVERSARY SESSION

Wednesday, 1:20 to 3:00 pm

1:20 pm: **Thirty years of PACS: progress and perspective** (Invited Paper),
Steven C. Horii M.D., The Univ. of Pennsylvania Health System (USA) . . . . . [8319 01]

2:00 pm: **Reflections on 30 years of PACS** (Invited Paper),
Janice C. Honeyman-Buck, Univ. of Florida (USA) . . . . . [8319 02]

2:20 pm: **Thirty years of PACS evolution** (Invited Paper)
H. K. (Bernie) Huang, The Univ. of Southern California (USA) and Shanghai Institute of Technical Physics (China) and Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [8319 03]

2:40 pm: **PACS: the next 30 years** (Invited Paper)
Eliot L. Siegel M.D., Univ. of Maryland Medical Ctr. (USA) . [8319 04]

Ultrasonic Imaging, Tomography, and Therapy
Conference 8320

Monday, 10:10 to 11:10 am
Room: California

Integration of 3D intraoperative ultrasound for enhanced neuronavigation [8320-28]

Keith Paulsen
Thayer School of Engineering at Dartmouth; Dartmouth-Hitchcock Medical Ctr; Norris Cotton Cancer Ctr., Dartmouth Medical School (USA)

True three-dimensional (3D) volumetric ultrasound (US) acquisitions stand to benefit intraoperative neuronavigation on multiple fronts. While traditional two-dimensional (2D) US and its tracked, hand-swept version have been recognized for many years to advantage significantly image-guided neurosurgery, especially when coregistered with preoperative MR scans, its unregulated and incomplete sampling of the surgical volume of interest have limited certain intraoperative uses of the information that are overcome through direct volume acquisition (i.e, through 2D scan-head transducer arrays). In this presentation, we will illustrate several of these advantages, including fiducial-less, image-based intraoperative registration (and re-registration) and automated, volumetric displacement mapping for intraoperative image updating. These applications of 3D US are enabled by algorithmic advances in US image calibration, and volume rasterization and interpolation for multi-acquisition synthesis that will also be highlighted. We expect to demonstrate that coregistered 3D US is well worth incorporating into the standard neurosurgical navigational environment relative to traditional tracked, hand-swept 2D US.

Biography: **Dr. Keith D. Paulsen, Ph.D.** is the Robert A. Pritzker Chair in Biomedical Engineering at the Thayer School of Engineering at Dartmouth, Professor of Radiology at Dartmouth Medical School, Director of the Advanced Imaging Center at Dartmouth Hitchcock Medical Center, Scientific Director of the Advanced Surgical Center also at Dartmouth Hitchcock, Associate Director of Translational Programs for SYNERGY, Dartmouth's Center for Clinical and Translational Science, and Co-Director of the Cancer Imaging and Radiobiology Research Program at the Norris Cotton Cancer Center. His research specializes in cancer imaging and image-guidance techniques in the breast and brain. Dr. Paulsen has published over 275 articles in the peer-reviewed scientific and medical literature and has received numerous awards for funding his research from the National Institutes of Health.

Sunday Workshops

5 February

Image-Guided Procedures, Robotic Interventions, and Modeling
Conference 8316
Time: 5:45 to 7:45 pm · Room: California

Regulatory Changes and New Opportunities in Biomedical Device Development

Workshop Chair: **Kenneth H. Wong,** Virginia Polytechnic Institute and State Univ. (USA)

Important and recent changes in the regulatory environment may have profound effects on drug and biomedical device development. (1) The America Invents Act has been hailed as the most comprehensive overhaul to the U.S. patent system since 1836, and includes numerous changes that will affect universities, entrepreneurs, and companies of all sizes. During the implementation phase of this legislation -- which is occurring now -- the U.S. Patent and Trademark Office (USPTO) will be soliciting input from the community to guide its rule making. (2) During the last year, reports from both the U.S. Food and Drug Administration (FDA) and the Institute of Medicine (IOM) have addressed changing the approval process for medical devices, focusing particularly on the 510(k) process whereby a device can be deemed to be "substantially equivalent" to an existing or predicate device. Technology for image guided procedures may be particularly affected by new laws and policy in this area, since many innovations in our field are heavily dependent on existing devices and systems.

Panel members from the workshop will provide a brief overview of these and other important regulatory changes, followed by a period for discussion and Q&A with the audience.

Biomedical Applications in Molecular, Structural, and Functional Imaging
Conference 8317
Time: 5:45 to 7:45 pm · Room: Golden West

Open Source Software Tools for Lung Image Analysis

Workshop Chair: **Nicholas J. Tustison,** Univ. of Virginia (USA)

Accompanying recent advances in lung imaging research is the availability of open source software for corresponding quantitative analysis. Although very interesting analysis techniques are frequently described in the research literature, it is oftentimes difficult to access the software instantiations of these techniques. For the researcher who is more interested in obtaining results from their data (as opposed to methodological development), or the researcher who wishes to build upon a solid code foundation, open source packages such as the Insight Toolkit have very attractive qualities. In this workshop, participants will be given hands-on exposure to recently developed computational methods specifically applicable to lung image analysis which have been built on the Insight Toolkit. These include basic methods for segmentation and registration as well as other useful applications such as unbiased template building. Lung imaging data will be made available to participants to analyze in real time during the course of the workshop.

The NIH Grants Process

Time: 5:45 to 7:45 pm · Room: San Diego

Workshop Chair: **Lee Rosen,** National Institutes of Health (USA)

Panelists:
Marie Gill, NBIB, National Institutes of Health (USA)
Zeynep Erim, NBIB, National Institutes of Health (USA)
Mia K. Markey, The Univ. of Texas at Austin (USA)
Michael F. McNitt-Gray, Univ. of California, Los Angeles (USA)

This workshop will focus on the NIH peer review process and institute considerations that are important in preparing a grant application for financial support of research. Speakers will include representatives of peer review and the NIH institutes as well as members of the academic community who have excelled in grant preparation. Information will focus on the procedures, features and important information that are key to passing peer review. Presentation will cover structure and preparation and what study sections look for in a competitive application. Institute representatives will cover funding announcements and opportunities and how to apply.

TOPICS:
- The NIH grant application review process
- Contacting appropriate NIH Program staff
- Finding the right study section to review your application
- Presenting a significant or innovative idea
- Technology-driven applications
- Varieties of grant mechanisms (R03, R21, R01, training grants, etc.)
- What to include in a cover letter
- Resubmitting your amended application
- Suggestions for early career investigators as well as seasoned grant applicants.

Workshops Included in Your Registration

Tuesday Workshops

7 February

Physics of Medical Imaging
Conference 8313

Image Perception, Observer Performance, and Technology Assessment
Conference 8318:

Time: 5:00 to 7:00 pm · Room: California

Evaluating Image Quality Performance in CT

Workshop Chairs: **Craig K. Abbey,** Univ. of California, Santa Barbara (USA); **Christoph Hoeschen,** Helmholtz Zentrum München GmbH (Germany); **Iacovos S. Kyprianou,** U.S. Food and Drug Administration (USA)

Panel Members: **François Bochud,** Ctr. Hospitalier Univ. Vaudois (Switzerland); **Kyle J. Myers,** U.S. Food and Drug Administration (USA); **Peter B. Noel,** Technische Univ. München (Germany); **Helmut Schlattl,** Helmholtz Zentrum München GmbH (Germany); **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ. (USA)

Computed tomography (CT) is a powerful tool for imaging the human body and due to recent innovations it has become an indispensible imaging tool in clinical practice. However, CT yields among the highest effective radiation doses in all of diagnostic radiology.

In recent years there has been increased interest to reduce CT dose by improving/optimizing CT system design and acquisition geometries and imaging protocols as well as by using more efficient image reconstruction techniques. The success of these will be critically dependent on meaningful validations of image quality for a specific acquisition/reconstruction method. A consistent approach to evaluation is a necessity since the innovative approaches to CT system design (i.e. types of detectors, number of detector rows, scatter reduction techniques, reconstruction algorithms etc.) differ from each other. Validation must take into account the signal transfer and noise properties of the data generation, acquisition and reconstruction algorithms, as well as the effect of these on the image readers in the context of performing a relevant task.

The purpose of the workshop is to bring together scientists with a diverse but relevant background to discuss ideas for evaluating CT image quality. The panelist's expertise covers a broad range of imaging physics, system design, CT reconstruction algorithms and image perception. Panelists will discuss various approaches to validating the CT image acquisition and reconstruction chain as well as limitations of their approach.

Image Processing and Conference
Conference 8314

Computer-Aided Diagnosis
Conference 8315

Time: 5:00 to 7:00 pm · Room: Grand Exhibit Hall

Interactive Demonstrations

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

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 MI 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 will interact with the researchers as they discuss and demonstrate their systems.

This workshop provides a unique opportunity to see and experience the systems presented at SPIE Medical Imaging and to discuss their design and use with developers. For more information and to submit your proposal to demonstrate, visit the workshop Web site.

The deadline for submitting proposals is January 20, 2012. Participants of all Medical Imaging conferences are encouraged to submit proposals.

Advanced PACS-based Imaging Informatics and Therapeutic Applications
Conference 8319

Time: 5:00 to 6:30 pm · Room: Golden West

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.

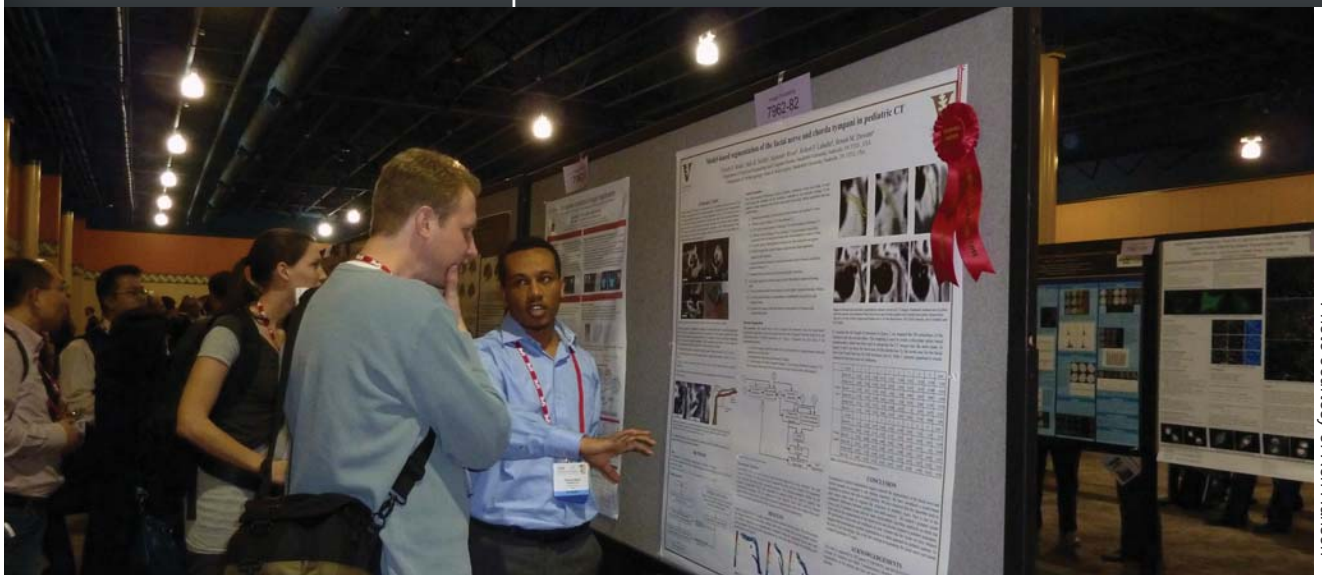


Photo courtesy of Ken Hanson

Poster Session Information

Grand Exhibit Hall

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

SUNDAY/MONDAY POSTER SESSION

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

Author Setup Time: Sunday after 9:40 am

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

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

Author Setup 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 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 71 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.

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.

Meet with NIH Staff

Monday 6 February · 9:00 to 11:00 am · Room: Royal Palm VI

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.

ASK QUESTIONS REGARDING:

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

WHO SHOULD ATTEND:

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

Dessert with the Experts

FREE
Students receive one complimentary ticket with registration.

A Student Networking Event

Monday 6 February · 6:30 to 7:30 pm

See ticket for location.
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 7 February · 12:10 to 1:20 pm · Room: Royal Palm V

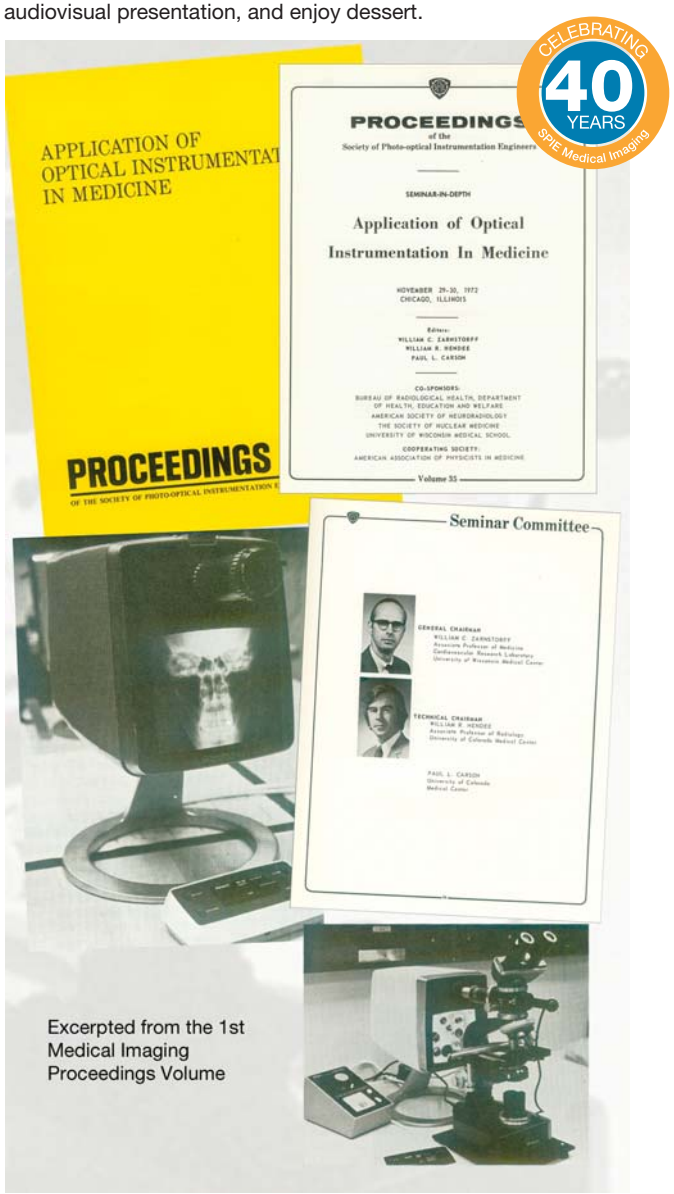
Lunch tickets required. Sign-up at registration required before coffee break on Tuesday.

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

40th Anniversary Celebration

Wednesday 8 February · 3:00 to 3:50 pm
Grand Exhibit Hall

We celebrate 40 years of Medical Imaging during an extended coffee break on Wednesday afternoon. Come see the posters, an audiovisual presentation, and enjoy dessert.



Excerpted from the 1st Medical Imaging Proceedings Volume

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Radiation Dose in CT SC1064 NEW
Course level: Introductory
CEU .35 $325 Member / $375 Non-member USD
Saturday 1:30 to 5:30 pm
Instructor: **Michael McNitt-Gray Ph.D.**

Diffusion Imaging SC1063 NEW
Course level: Introductory
CEU .35 $325 Member / $375 Non-member USD
Sunday 8:30 am to 12:30 pm
Instructor: **Thomas Schultz**

Exploring Brain Connectivity in-vivo: from Theory to Practice SC1065 NEW
Course level: Introductory
CEU .35 $325 Member / $375 Non-member USD
Sunday 1:30 to 5:30 pm
Instructors: **Sonia Pujol, Ph.D., Martin Styner, Ph.D.,** and **Guido Gerig, Ph.D.**

Spectral CT Imaging SC987
Course level: Intermediate
CEU .35 $325 Member / $375 Non-member USD
Saturday 1:30 to 5:30 pm
Instructors: **Björn Heismann**, **Bernhard Schmidt,** and **Thomas Flohr**

MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU) SC829
Course level: Intermediate
CEU .35 $325 Member / $375 Non-member USD
Saturday 1:30 to 5:30 pm
Instructors: **Klaus Mueller**, **Eric Papenhausen,** and **Ziyi Zheng**

Principles and Advancements in X-ray Computed Tomography SC471
Available in ONLINE format
Course level: Introductory
CEU .35
$415 Member / $465 Non-member USD
Saturday 8:30 am to 12:30 pm
Instructor: **Jiang Hsieh**

X-Ray Detector Performance: Principles and Measurements using a Linear Systems Approach SC358
Course level: Advanced
CEU .35 $325 Member / $375 Non-member USD
Sunday 1:30 to 5:30 pm
Instructor: **Ian Cunningham**

Graph Algorithmic Techniques for Biomedical Image Segmentation SC1026
Course level: Intermediate
CEU .35 $325 Member / $375 Non-member USD
Sunday 1:30 to 5:30 pm
Instructor: **Mona Garvin Ph.D.**

Statistics of Medical Imaging SC1025
Course level: Intermediate
CEU .65 $530 Member / $630 Non-member USD
Saturday 8:30 am to 5:30 pm
Instructor: **Tianhu Lei**

Fundamentals of Medical Image Processing and Analysis SC086
Available in ONLINE format
Course level: Intermediate
CEU .65
$530 Member / $630 Non-member USD
Saturday 8:30 am to 5:30 pm
Instructor: **Thomas Deserno**

Medical Imaging: From Concept to Market WS1024
Course level: Introductory
CEU .35 $325 Member / $375 Non-member USD
Sunday 1:30 to 5:30 pm
Instructor: **Mostafa Analoui PhD**

Writing for Publication in Medical Imaging WS776
Course level: Introductory
CEU .35 $100 Member / $150 Non-member USD
Saturday 1:30 to 5:30 pm
Instructor: **Kenneth Hanson**

Early Career Professional Development in Medical Imaging WS757
Course level: Introductory
CEU .35 $50 Member / $100 Non-member USD
Sunday 8:30 am to 12:30 pm
Instructor: **Elizabeth Krupinski Ph.D.**

Registration Required.
See SPIE Cashier to register.

Conference 8313

Room: Town & Country

Sunday-Wednesday 5-8 Feb. 2012
Proceedings of SPIE Vol. 8313

Physics of Medical Imaging

Conference Chairs: **Norbert J. Pelc,** Stanford Univ. (USA); **Robert M. Nishikawa,** The Univ. of Chicago (USA)

Conference Co-Chair: **Bruce R. Whiting,** Univ. of Pittsburgh (USA)

Program Committee: **Hilde Bosmans,** UZ Leuven (Belgium); **Guang-Hong Chen,** Univ. of Wisconsin-Madison (USA); **Dianna D. Cody,** The Univ. of Texas M.D. Anderson Cancer Ctr. (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); **Christoph Hoeschen,** Helmholtz Zentrum München 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. Health System (USA); **Jinyi Qi,** Univ. of California, Davis (USA); **John A. Rowlands,** Thunder Bay Regional Health Sciences Ctr. (Canada); **John M. Sabol,** GE Healthcare (USA); **Taly G. Schmidt,** Marquette Univ. (USA); **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ. (USA); **Anders Tingberg,** Scanias Univ. Hospital (Sweden); **John Yorkston,** Carestream Health Technology and Innovation Ctr. (USA)

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

8313 continues on page 18

Conference 8314

Rooms: San Diego

Monday-Thursday 6-9 Feb. 2012
Proceedings of SPIE Vol. 8314

Image Processing

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

Program Committee: **Mostafa Analoui,** The Livingston Group (USA); **Elsa D. Angelini,** Telecom ParisTech (France); **Kyongtae Ty Bae,** Univ. of Pittsburgh Medical Ctr. (USA); **Christian Barillot,** IRISA / INRIA Rennes (France); **Baowei Fei,** Emory Univ. (USA); **Aaron Fenster,** Robarts Research Institute (Canada); **Bernd Fischer,** Univ. zu Lübeck (Germany); **Benoit M. Dawant,** Vanderbilt Univ. (USA); **Alejandro Federico 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,** Deutsches Krebsforschungszentrum (Germany); **Bennett A. Landman,** Vanderbilt Univ. (USA); **Tianhu Lei,** Univ. of Pittsburgh Medical Ctr. (USA); **Boudewijn Lelieveldt,** Leids Univ. Medisch Ctr. (Netherlands); **Boštjan Likar,** Univ. of Ljubljana (Slovenia); **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); **Josien P. Pluim,** Univ. Medical Ctr. Utrecht (Netherlands); **Jerry L. Prince,** The Johns Hopkins Univ. (USA); **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 California, San Francisco (USA); **Martin A. Styner,** The Univ. of North Carolina at Chapel Hill School of Medicine (USA); **Philippe Thévenaz,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Jayaram K. Udupa,** The Univ. of Pennsylvania Health System (USA); **Andreas Wahle,** The Univ. of Iowa (USA)

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

8314 continues on page 32

Conference 8315

Room: Royal Palms I-III

Tuesday -Thursday 7-9 Feb. 2012
Proceedings of SPIE Vol. 8315

Computer-Aided Diagnosis

Conference Chairs: **Bram van Ginneken,** Radboud Univ. Nijmegen (Netherlands); **Carol L. Novak,** Siemens Corporate Research (USA)

Program Committee: **Samuel G. Armato III,** The Univ. of Chicago (USA); **Susan Astley,** The Univ. of Manchester (UK); **Stephen Aylward,** Kitware, Inc. (USA); **Kyongtae Ty Bae,** Univ. of Pittsburgh Medical Ctr. (USA); **Matthew S. Brown,** Univ. of California, Los Angeles (USA); **Marleen de Bruijne,** Erasmus MC (Netherlands); **Heang-Ping Chan,** Univ. of Michigan Health System (USA); **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 (USA); **Hayit Greenspan,** Tel Aviv Univ. (Israel); **Metin N. Gurcan,** The Ohio State Univ. Medical Ctr. (USA); **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); **Anant Madabhushi,** Rutgers, The State Univ. of New Jersey (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 Medical Ctr. (USA); **Georgia D. Tourassi,** Oak Ridge National Lab. (USA); **Rafael Wiemker,** Philips Research (Germany); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (USA)

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

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Conference 8316

Room: California

Sunday-Tuesday 5-7 Feb. 2012
Proceedings of SPIE Vol. 8316

Image-Guided Procedures, Robotic Interventions, and Modeling

Conference Chairs: **David R. Holmes III,** Mayo Clinic (USA); **Kenneth H. Wong,** Virginia Polytechnic Institute and State Univ. (USA)

Program Committee: **Purang Abolmaesumi,** The Univ. of British Columbia (Canada); **Wolfgang Birkfellner,** Medizinische Univ. Wien (Austria); **Kevin R. Cleary,** Children's National Medical Ctr. (USA); **Alexandre Falcão,** Univ. Estadual de Campinas (Brazil); **Baowei Fei,** Emory Univ. (USA); **Gabor Fichtinger,** Queen's Univ. (Canada); **Robert L. Galloway, Jr.,** Vanderbilt Univ. (USA); **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); **Michael I. Miga,** Vanderbilt Univ. (USA); **Terry M. Peters,** Robarts Research Institute (Canada); **Frank Sauer,** Siemens Corporate Research (USA); **Eric J. Siebel,** Univ. of Washington (USA); **Guy Shechter,** Philips Medical Systems (USA); **Jayaram K. Udupa,** The Univ. of Pennsylvania Health System (USA); **Robert J. Webster III,** Vanderbilt Univ. (USA); **Jay B. West,** Accuray, Inc. (USA); **Ivo Wolf,** Deutsches Krebsforschungszentrum (Germany); **Ziv R. Yaniv,** Georgetown Univ. (USA)

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

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Conference 8317

Room: Golden West

Sunday-Tuesday 5-7 Feb. 2012
Proceedings of SPIE Vol. 8317

Biomedical Applications in Molecular, Structural, and Functional Imaging

Conference Chairs: **Robert C. Molthen,** Zablocki VA Medical Ctr. (USA); **John B. Weaver,** Dartmouth Hitchcock Medical Ctr. (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); **Andreas H. Hielscher,** Columbia Univ. (USA); **Xiaoping P. Hu,** Emory Univ. (USA); **John F. LaDisa,** Marquette Univ. (USA); **Armando Manduca,** Mayo Clinic College of Medicine (USA); **Nicholas J. Tustison,** Univ. of Virginia (USA); **Erik Leo Ritman,** Mayo Clinic (USA); **Merryn H. Tawhai,** The Univ. of Auckland (New Zealand); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (USA)

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room on Tuesday morning. See Technical Events for additional information.

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Conference 8318

Room: California

Wednesday-Thursday 8-9 Feb. 2012
Proceedings of SPIE Vol. 8318

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 Cancer Institute (USA)

Program Committee: **François Bochud,** Ctr. Hospitalier Univ. Vaudois (Switzerland); **Jovan G. Brankov,** Illinois Institute of Technology (USA); **Darrin C. Edwards,** The Univ. of Chicago Medical Ctr. (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); **Matthew A. Kupinski,** College of Optical Sciences, The Univ. of Arizona (USA); **Elizabeth A. Krupinski,** The Univ. of Arizona (USA); **Anthony J. Maeder,** Univ. of Western Sydney (Australia); **David J. Manning,** Lancaster Univ. (UK); **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)

WORKSHOP
Evaluating Image Quality Performance in CT

California Room · Tues. 5:00 to 7:00 pm

Workshop Chairs: **Craig K. Abbey,** Univ. of California, Santa Barbara (USA); **Christoph Hoeschen,** Helmholtz Zentrum München GmbH (Germany); **Iacovos S. Kyprianou,** U.S. Food and Drug Administration (USA)

For details see page 11.

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

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Conference 8319

Room: Golden West

Wednesday-Thursday 8-9 Feb. 2012
Proceedings of SPIE Vol. 8319

Advanced PACS-based Imaging Informatics and Therapeutic Applications

Conference Chairs: **William Boonn,** The Univ. of Pennsylvania Health System (USA); **Brent J. Liu,** The Univ. of Southern California (USA)

Program Committee: **James Chen,** Univ. of California, San Diego (USA); **Janice C. Honeyman-Buck,** Univ. of Florida (USA); **Steven C. Horii,** The Univ. of Pennsylvania Health System (USA); **Woojin Kim,** The Univ. of Pennsylvania Health System (USA); **Maria Y. Law,** The Hong Kong Polytechnic Univ. (Hong Kong, China); **Heinz U. Lemke,** Computer Assisted Radiology and Surgery (Germany); **Khan M. Siddiqui,** Microsoft Corp. (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,** The Johns Hopkins Univ. (USA)

WORKSHOP
DICOM

Golden West Room · Tues. 5:00 to 6:30 pm
Steven C. Horii, The Univ. of Pennsylvania Health System (USA)

For details see page 11.

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

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Conference 8320

Room: Royal Palms I-III

Sunday-Monday 5-6 Feb. 2012
Proceedings of SPIE Vol. 8320

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); **Nebojsa Duric,** Karmanos Cancer Institute (USA) and Delphinus Medical Technologies (USA); **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 A. Jensen,** Technical Univ. of Denmark (Denmark); **Stephen A. McAleavey,** Univ. of Rochester (USA); **Kirk K. Shung,** The Univ. of Southern California (USA); **Kai E. Thomenius,** General Electric Co. (USA); **William F. Walker,** Univ. of Virginia (USA)

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room on Monday afternon. See Technical Events for additional information.

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

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

Keynote and 3D Breast Imaging
Session Chairs: **Norbert J. Pelc,** Stanford Univ. (USA); **Robert M. Nishikawa,** The Univ. of Chicago (USA)

8:00 am: **Mammography screening: its benefits, risks, and continuing controversy** *(Keynote Presentation)*, R. Edward Hendrick, Univ. of Colorado Denver (USA) . . . . . .[8313-01]

9:00 am: **An object specific and dose-sparing scatter correction approach for a dedicated cone-beam breast CT system using a parallel-hole collimator**, Kai Yang, George Burkett, John M. Boone, UC Davis Medical Ctr. (USA). . . . . .[8313-02]

9:20 am: **Potential for cone beam scatter imaging in screening mammography**, Lubna Peerzada, Laila Hassan, Wei Zhou, Carolyn A. MacDonald, Univ. at Albany (USA) . . . . . .[8313-03]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Visualization, Segmentation, and Registration
Session Chairs: **Jayaram K. Udupa,** The Univ. of Pennsylvania Health System (USA); **Pierre Jannin,** Univ. de Rennes 1 (France)

8:00 am: **Deformable registration of the inflated and deflated lung for cone-beam CT-guided thoracic surgery**, Ali Uneri, Sajendra Nithiananthan, Sebastian Schafer, Yoshito Otake, J. Webster Stayman, The Johns Hopkins Univ. (USA); Gerhard Kleinszig, Siemens AG (Germany); Marc S. Sussman M.D., Johns Hopkins Bayview Medical Ctr. (USA); Russell H. Taylor, The Johns Hopkins Outpatient Ctr. (USA); Jerry L. Prince, Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . .[8316-01]

8:20 am: **Incorporation of prior knowledge for region of change imaging from sparse scan data in image-guided surgery**, Junghoon Lee, Joseph W. Stayman, Yoshito Otake, Sebastian Schafer, Wojciech Zbijewski, A. Jay Khanna, Jerry L. Prince, Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . .[8316-02]

8:40 am: **GPU-based iterative relative fuzzy connectedness image segmentation**, Ying Zhuge, National Institutes of Health (USA); Jayaram K. Udupa, The Univ. of Pennsylvania Health System (USA); Robert W. Miller, National Institutes of Health (USA) . .[8316-03]

9:00 am: **Automatic anatomy recognition via fuzzy object models**, Jayaram K. Udupa, Dewey Odhner, The Univ. of Pennsylvania Health System (USA); Alexandre Falcão, Univ. Estadual de Campinas (Brazil); Krzysztof C. Ciesielski, West Virginia Univ. (USA); Paulo A. V. Miranda, Univ. Estadual de Campinas (Brazil); Shipra Mishra, The Univ. of Pennsylvania Health System (USA); George J. Grevera, Saint Joseph's Univ. (USA); Babak Saboury, The Univ. of Pennsylvania Health System (USA); Drew A. Torigian, Hospital of the Univ. of Pennsylvania (USA) . . . . . .[8316-04]

9:20 am: **Automated volume of interest delineation and rendering of cone beam CT images in interventional cardiology**, Cristian Lorenz, Dirk Schäfer, Philips Research (Germany); Peter G. Eshuis, Philips Healthcare (Netherlands); John D. Carroll M.D., Univ. of Colorado Denver (USA); Michael Grass, Philips Technologie GmbH (Germany) . . . . . .[8316-05]

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

8316 continues on page 19

Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Functional Magnetic Resonance Imaging
Session Chairs: **Axel Wismüller,** Univ. of Rochester Medical Ctr. (USA); **John B. Weaver,** Dartmouth Hitchcock Medical Ctr. (USA); **Xiaoping P. Hu,** Emory Univ. (USA)

8:00 am: **Simulation of fMRI signals to validate dynamic causal modeling estimation**, Mobin Anandwala, Mohamad R. Siadat, Shamil M. Hadi, Oakland Univ. (USA) . . . . . .[8317-01]

8:20 am: **Novel MRI methodology to detect human whole-brain connectivity changes after ingestion of fructose or glucose**, Manbir Singh, Bryce Wilkins, Sinchai Tsao, Kathleen Page, The Univ. of Southern California (USA) . . . . . .[8317-02]

8:40 am: **Primary motor cortex activity reduction under the regulation of SMA by real-time fMRI**, Jia Guo, Xiaojie Zhao, Beijing Normal Univ. (China); Yi Li, Beijing Normal Univ. (USA); Yao Li, Beijing Normal Univ. (China); Kewei Chen, Banner Good Samaritan Medical Ctr. (USA). . . . . .[8317-03]

9:00 am: **An fMRI study of neural pathways following acupuncture in mild cognitive impairment patients**, Yuanyuan Feng, Lijun Bai, Hu Wang, Chongguang Zhong, Youbo You, Wensheng Zhang, Jie Tian, Institute of Automation (China) . . . . . .[8317-04]

9:20 am: **Semi-blind FastICA of fMRI using temporal constraints**, Xinyue Ma, Hang Zhang, Xia Wu, Li Yao, Zhiying Long, Beijing Normal Univ. (China). . . .[8317-05]

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

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

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

Ultrasound Computer Tomography: Novel Technology
Session Chair: **Nebojsa Duric,** Karmanos Cancer Institute (USA)

8:00 am: **Ultrasound waveform tomography with the total-variation regularization for detection of small breast tumors**, Youzuo Lin, Lianjie Huang, Zhigang Zhang, Los Alamos National Lab. (USA). . . . . .[8320-01]

8:20 am: **Efficient implementation of ultrasound waveform tomography using source encoding**, Zhigang Zhang, Lianjie Huang, Youzuo Lin, Los Alamos National Lab. (USA) . . . . . .[8320-02]

8:40 am: **Nonlinear inversion modeling for ultrasonic computed tomography: transition from soft to hard tissues imaging**, Philippe Lasaygues, Julien Rouyer, Emilie Franceschini, Serge Mensah, Régine Guillermin, Ctr. National de la Recherche Scientifique (France) . . . . . .[8320-03]

9:00 am: **Phantom image results of optimized full 3D USCT**, Nicole V. Ruiter, Michael Zapf, Torsten Hopp, Robin Dapp, Hartmut Gemmeke, Karlsruher Institut für Technologie (Germany) . . . . . .[8320-04]

9:20 am: **Travel time denoising in ultrasound tomography**, Olivier Roy, Cuiping Li, Nebojsa Duric, Delphinus Medical Technologies (USA) . . . . . .[8320-05]

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

8320 continues on page 19

Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

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

3D Breast Imaging
Session Chairs: **Hilde Bosmans,** UZ Leuven (Belgium); **Joseph Y. Lo,** Duke Univ. (USA)

10:10 am: **A fast scatter field estimator for digital breast tomosynthesis**, Oliver Diaz, Univ. of Surrey (UK); David R. Dance, Kenneth C. Young, The Royal Surrey County Hospital NHS Trust (UK) and Univ. of Surrey (UK); Premkumar Elangovan, Univ. of Surrey (UK); Predrag R. Bakic, Univ. of Pennsylvania (USA); Kevin Wells, Univ. of Surrey (UK) . . . . . .[8313-04]

10:30 am: **Optimization of continuous tube motion and step-and-shoot motion in digital breast tomosynthesis systems with patient motion**, Raymond J. Acciavatti, Andrew D. Maidment, The Univ. of Pennsylvania Health System (USA). . . . . .[8313-05]

10:50 am: **Optimizing configuration parameters of a stationary digital breast tomosynthesis system based on carbon nanotube x-ray sources**, Andrew Tucker, The Univ. of North Carolina at Chapel Hill School of Medicine (USA); Xin Qian, Emily Gidcumb, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill (USA); Derrek Spronk, Frank Spranger, XinRay Systems Inc. (USA); Johnny Kuo, Susan Ng, Real-Time Tomography, LLC (USA) . . . . . .[8313-06]

11:10 am: **Image acquisition considerations for dual-energy contrast-enhanced breast tomosynthesis**, Melissa L. Hill, Univ. of Toronto (Canada) and Sunnybrook Research Institute (Canada); James G. Mainprize, Sunnybrook Research Institute (Canada); Slyvie Puong, Ann-Katherine Carton, Razvan Iordache, Serge L. Muller, GE Healthcare France (France); Martin J. Yaffe, Univ. of Toronto (Canada) and Sunnybrook Research Institute (Canada) . . . . . .[8313-07]

11:30 am: **Development of a task-based strategy for optimized contrast enhanced breast imaging: analysis of six imaging techniques for mammography and tomosynthesis**, Lynda C. Ikejimba, Nooshin Kiarashi, Yuan Lin, Baiyu Chen, Duke Univ. Medical Ctr. (USA) and Duke Univ. (USA); Sujata V. Ghate M.D., Duke Univ. Medical Ctr. (USA); Moustafa Zerhouni, Computerized Imaging Reference Systems, Inc. (USA); Joseph Y. Lo, Ehsan Samei, Duke Univ. Medical Ctr. (USA) and Duke Univ. (USA). . . . .[8313-08]

11:50 am: **Experimental quantification of lesion detectability in contrast enhanced dual energy digital breast tomosynthesis**, Yue-Houng Hu, Wei Zhao, Stony Brook Univ. (USA) . . . . . .[8313-09]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Tracking and Radiation Therapy
Session Chairs: **Gabor Fichtinger,** Queen's Univ. (Canada); **Jay B. West,** Accuray, Inc. (USA)

10:10 am: **Error prediction for probe guides**, J. Michael Fitzpatrick, Vanderbilt Univ. (USA). .[8316-06]

10:30 am: **A novel fully automatic system for the evaluation of electromagnetic tracker**, Ingmar Gergel, Johannes Gaa, Michael Müller, Hans-Peter Meinzer, Ingmar Wegner, Deutsches Krebsforschungszentrum (Germany) . . . . . .[8316-07]

10:50 am: **Tracker-on-C for cone-beam CT-guided surgery: evaluation of geometric accuracy and clinical applications**, Sureerat Reaungamornrat, Yoshito Otake, Ali Uneri, Sebastian Schafer, Daniel J. Mirota, Sajendra Nithiananthan, J. Webster Stayman, A. Jay Khanna, The Johns Hopkins Univ. (USA); Douglas D. Reh, The Johns Hopkins Outpatient Ctr. (USA); Gary L. Gallia, The Johns Hopkins Univ. (USA); Russell H. Taylor, The Johns Hopkins Outpatient Ctr. (USA); Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . .[8316-08]

11:10 am: **Application of 3D surface imaging in breast cancer radiotherapy**, Tanja Alderliesten, Jan-Jakob Sonke, Anja Betgen, Joeri Honnef, Corine van Vliet-Vroegindeweij, Peter Remeijer, The Netherlands Cancer Institute (Netherlands) . . . . . .[8316-09]

11:30 am: **Improvement of tracking accuracy and stability by recursive image processing in real-time tumor-tracking radiotherapy system**, Naoki Miyamoto, Kenneth L. Sutherland, Ryusuke Suzuki, Taeko Matsuura, Chie Toramatsu, Seishin Takao, Hideaki Nihongi, Rumiko Kinoshita, Shinichi Shimizu, Rikiya Onimaru, Kikuo Umegaki, Hiroki Shirato, Masayori Ishikawa, Hokkaido Univ. (Japan) . . .[8316-10]

11:50 am: **Model-based risk assessment for motion effects in 3D radiotherapy of lung tumors**, René Werner, Jan Ehrhardt, Alexander Schmidt-Richberg, Heinz Handels, Univ. zu Lübeck (Germany) . . .[8316-11]

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

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Magnetic Resonance Imaging of Brain Structure and Function
Session Chairs: **Xiaoping P. Hu,** Emory Univ. (USA); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (USA); **Juan R. Cebral,** George Mason Univ. (USA)

10:10 am: **Automatic corpus callosum segmentation using a deformable active Fourier contour model**, Clement Vachet, Benjamin Yvernault, Kshamta Bhatt, Rachel G. Smith, The Univ. of North Carolina at Chapel Hill (USA); Guido Gerig, The Univ. of Utah (USA); Heather Cody Hazlett, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA). . . . . .[8317-06]

10:30 am: **Tractography of white matter based on diffusion tensor imaging in ischemic stroke involving the corticospinal tract: a preliminary study**, Chongguang Zhong, Lijun Bai, Institute of Automation (China); Fangyuan Cui, Beijing Univ. of Chinese Medicine (China); Ruwei Dai, Institute of Automation (China); Ting Xue, Xidian Univ. (China); Hu Wang, Yuanyuan Feng, Zhenyu Liu, Youbo You, Jie Tian, Institute of Automation (China) . . . . . .[8317-07]

10:50 am: **Exploration of microstructural abnormalities in borderline personality disorder**, Klaus H. Fritzsche, Deutsches Krebsforschungszentrum (Germany); Romuald Brunner, Romy Henze, UniversitätsKlinikum Heidelberg (Germany); Hans-Peter Meinzer, Bram Stieltjes, Deutsches Krebsforschungszentrum (Germany). . . . . .[8317-08]

11:10 am: **Negative BOLD response and serotonin concentration within rostral subgenual portion of the anterior cingulate cortex for long-allele carriers during perceptual processing of emotional tasks**, Shamil M. Hadi, Mohamad R. Siadat, Oakland Univ. (USA); Abbas Babajani-Feremi, Washington University in St. Louis School of Medic (USA); Barbara Oakley, Oakland Univ. (USA) . . . . . .[8317-09]

11:30 am: **Application of fMRI to obesity research: differences in reward pathway activation measured with fMRI BOLD during visual presentation of high and low caloric foods**, Sinchai Tsao, Tanja Adam, Michael I. Goran, Manbir Singh, The Univ. of Southern California (USA) . . . . . .[8317-10]

11:50 am: **Alteration of functional connectivity during real time fMRI regulation of PCC**, Gaoyan Zhang, Yao Li, Zhiying Long, Beijing Normal Univ. (China) .[8317-11]

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

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

SESSION 2
Room: Royal Palms. . . Sun. 10:10 am to 12:10 pm

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

10:10 am: **Comparison of spatiotemporal interpolators for 4D image reconstruction from 2D transesophageal ultrasound**, Alexander Haak, Erasmus MC (Netherlands); Marijn van Stralen, Univ. Medical Ctr. Utrecht (Netherlands); Gerard van Burken, Stefan Klein, Erasmus MC (Netherlands); Josien P. Pluim, Univ. Medical Ctr. Utrecht (Netherlands); Nico de Jong, Antonius F. W. van der Steen, Johan G. Bosch, Erasmus MC (Netherlands) . . . . . .[8320-06]

10:30 am: **Adaptive volume rendering of cardiac 3D ultrasound images: utilizing blood pool statistics**, Jon Petter Åsen, Norwegian Univ. of Science and Technology (Norway); Erik N. Steen, GE Vingmed Ultrasound (Norway); Gabriel Kiss, Anders Thorstensen, Norwegian Univ. of Science and Technology (Norway) and St. Olavs Hospital (Norway); Stein I. Rabben, GE Vingmed Ultrasound (Norway). . . . . .[8320-07]

10:50 am: **Dynamic shape modeling of the mitral valve from real-time 3D ultrasound images using continuous medial representation**, Alison M. Pouch, The Univ. of Pennsylvania (USA); Paul A. Yushkevich, Benjamin M. Jackson, The Univ. of Pennsylvania Health System (USA); Joseph H. Gorman III, Robert C. Gorman, Chandra M. Sehgal, Hospital of the Univ. of Pennsylvania (USA) . . . . . .[8320-08]

11:10 am: **Learning-based scan plane identification from fetal head ultrasound images**, Xiaoming Liu, GE Global Research (USA); Pavan Annangi, Mithun Gupta, Kajoli B. Krishnan, GE Global Research (India).[8320-09]

11:30 am: **Model-based coupled denoising and segmentation of medical images**, Ahmet Tuysuzoglu, Boston Univ. (USA) and GE Global Research (USA); Paulo Mendonca, Dirk Padfield, GE Global Research (USA) . . . . . .[8320-10]

11:50 am: **Motion compensation method using dynamic programming for quantification of neovascularization in carotid atherosclerotic plaques with contrast enhanced ultrasound (CEUS)**, Zeynettin Akkus, Erasmus MC (Netherlands); Assaf Hoogi, Erasmus MC (Netherlands) and Technion-Israel Institute of Technology (Israel); Guillaume Renaud, Gerrit L. ten Kate, Stijn van den Oord, Arend Schinkel, Erasmus MC (Netherlands); Nico de Jong, Antonius F. W. van der Steen, Erasmus MC (Netherlands) and Interuniversity Cardiology Institute of the Netherlands (Netherlands); Johan G. Bosch, Erasmus MC (Netherlands) . .[8320-11]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 3
Room: Town & Country. . . . . Sun. 1:20 to 3:00 pm

Breast Multi-Energy/Photon Counting

Session Chairs: **Mats E. Danielsson,** Royal Institute of Technology (Sweden); **Stephen J. Glick,** Univ. of Massachusetts Medical School (USA)

1:20 pm: **Comparing human observer performance in detecting micro-calcifications with energy weighting and photon counting breast CT**, Kesava S. Kalluri, Mufeed Mahd, Univ. of Massachusetts Lowell (USA); Stephen J. Glick, Univ. of Massachusetts Medical School (USA) . . . . . .[8313-10]

1:40 pm: **Development of a dynamic 4D anthropomorphic breast phantom for contrast-based breast imaging**, Nooshin Kiarashi, Duke Univ. Medical Ctr. (USA) and Duke Univ. (USA); Yuan Lin, William P. Segars, Sujata V. Ghate M.D., Lynda C. Ikejimba, Baiyu Chen, Joseph Y. Lo, Loren W. Nolte, Ehsan Samei, Duke Univ. Medical Ctr. (USA) . . . . . .[8313-11]

2:00 pm: **Mammogram enhancement using multienergy x-ray**, Jae-Hyun Kwon, Hyun-Hwa Oh, SungSu Kim, Younghun Sung, SeungDeok Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . .[8313-12]

2:20 pm: **Algorithmic scatter correction in dual-energy digital mammography for calcification imaging**, Xi Chen, Xi'an Jiaotong Univ. (China); Robert M. Nishikawa, The Univ. of Chicago (USA); Suk-Tak Chan, The Hong Kong Polytechnic Univ. (Hong Kong, China); Beverly A. Lau, The Univ. of Chicago Medical Ctr. (USA); Lei Zhang, The Hong Kong Polytechnic Univ. (Hong Kong, China); Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . .[8313-13]

2:40 pm: **Photon-counting spectral phase-contrast mammography**, Erik Fredenberg, Royal Institute of Technology (Sweden) and Philips Women's Healthcare (Sweden); Ewald Roessl, Thomas Koehler, Udo van Stevendaal, Philips Research Labs. (Germany); Ingrid Schulze-Wenck, Nataly Wieberneit, Philips GmbH Healthcare (Germany); Marco Stampanoni, Paul Scherrer Institut (Switzerland) and Univ. and ETH Zürich (Switzerland); Zhentian Wang, Paul Scherrer Institut (Switzerland); Rahel A. Kubik-Huch, Niklaus Hauser, Kantonsspital Baden AG (Switzerland); Mats Lundqvist, Philips Women's Healthcare (Sweden); Mats E. Danielsson, Royal Institute of Technology (Sweden); Magnus Åslund, Philips Women's Healthcare (Sweden) . . . . . .[8313-14]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Keynote and Robotics

Session Chairs: **David R. Holmes III,** Mayo Clinic (USA); **David M. Kwartowitz,** Clemson Univ. (USA)

1:20 pm: **Medical robotics and computer-integrated interventional medicine** *(Keynote Presentation)*, Russell H. Taylor, The Johns Hopkins Outpatient Ctr. (USA) . . . . . .[8316-12]

2:20 pm: **Does a robotic scrub nurse improve economy of movements?**, Juan P. Wachs, Mithun Jacob, Yu-Ting Li, Purdue Univ. (USA); George Akingba M.D., Indiana Univ. (USA) . . . . . .[8316-13]

2:40 pm: **The role of three-dimensional visualization in robotics-assisted cardiac surgery**, Maria E. Currie M.D., The Univ. of Western Ontario (Canada); Ana Luisa Trejos, Canadian Surgical Technologies and Advanced Robotics (Canada); Reiza Rayman, Michael W. A. Chu M.D., London Health Sciences Ctr. (Canada); Rajni Patel, Canadian Surgical Technologies and Advanced Robotics (Canada); Terry M. Peters, Robarts Research Institute, The Univ. of Western Ontario (Canada); Bob Kiaii M.D., London Health Sciences Ctr. (Canada) . . . . . .[8316-14]

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

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Cardiovascular Hemodynamics and Biomechanics

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

1:20 pm: **Computational hemodynamic study of intracranial aneurysms coexistent with proximal artery stenosis**, Marcelo A. Castro, Univ. Tecnologica Nacional (Argentina); Nora L. Peloc, Univ. Favaloro (Argentina); Christopher M. Putman, Inova Fairfax Hospital (USA); Juan R. Cebral, George Mason Univ. (USA) . . . . . .[8317-12]

1:40 pm: **Comparison of relative pressures calculated from PC-MRI and SPIV with catheter-based pressure measurements in a stenotic phantom model**, Iman Khodarahmi, Mostafa Shakeri, Univ. of Louisville (USA); Melanie Kotys-Traughber, Philips Medical Systems (USA); M. Keith Sharp, Amir A. Amini, Univ. of Louisville (USA) . . . . . .[8317-13]

2:00 pm: **A proposed parameter to correlate the flow diverter designs with observed flow modifications in high speed angiograms**, Ciprian N. Ionita, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . .[8317-14]

2:20 pm: **Shape-based analysis of right ventricular dysfunction after acute pulmonary embolism**, Nima Tajbakhsh, Wenzhe Xue, Hong Wu, Arizona State Univ. (USA); Eileen M. McMahon, Mayo Clinic (USA); Jianming Liang, Arizona State Univ. (USA); Marek Belohlavek, Mayo Clinic (USA) . . . . . .[8317-15]

2:40 pm: **A comparison of two methods to segment stent grafts in CT data**, Almar Klein, Michel Klaassen, Univ. Twente (Netherlands); J. Adam van der Vliet, Yvonne Hoogeveen, Leo J. Schultze Kool M.D., Willem K. Renema, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Cornelis H. Slump, Univ. Twente (Netherlands) . . . . . .[8317-16]

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

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

SESSION 3
Room: Royal Palms. . . . . Sun. 1:20 to 3:00 pm

Novel Beamforming Approaches

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

1:20 pm: **Generation of limited-diffraction wave by approximating X-wave with simple driving pulses**, Yaqin Li, Shaoyan Hua, Mingyue Ding, Yuchi Ming, Huazhong Univ. of Science and Technology (China) . . . . . .[8320-12]

1:40 pm: **Adaptive minimum variance beamforming combined with phase coherence imaging for ultrasound imaging**, Mengling Xu, Yimin Chen, Yuchi Ming, Mingyue Ding, Huazhong Univ. of Science and Technology (China) . . . . . .[8320-13]

2:00 pm: **Preliminary comparison of 3D synthetic aperture with Explososcan**, Morten F. Rasmussen, Jens M. Hansen, Technical Univ. of Denmark (Denmark); Rémi Dufait, Vermon S.A. (France); Jørgen A. Jensen, Technical Univ. of Denmark (Denmark). . . . . .[8320-50]

2:20 pm: **FPGA implementation of robust capon beamformer**, Xin Guan, Henry Zmuda, Jian Li, Mark Sheplak, Lin Du, Univ. of Florida (USA). . . . . .[8320-15]

2:40 pm: **Detection of breast microcalcifications using synthetic-aperture ultrasound**, Lianjie Huang, Yassin Labyed, Youzuo Lin, Zhigang Zhang, Los Alamos National Lab. (USA); Michael Williamson M.D., Robert Rosenberg M.D., Philip H. Heintz, Daniel Sandoval, The Univ. of New Mexico (USA) . . . . . .[8320-16]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 4
Room: Town & Country. . . . . Sun. 3:30 to 5:30 pm

Mammography

Session Chairs: **Anders Tingberg,** Scanias Univ. Hospital (Sweden); **Despina Kontos,** The Univ. of Pennsylvania Health System (USA)

3:30 pm: **Investigation of active matrix flat-panel imagers (AMFPIs) employing thin layers of polycrystalline HgI_2 photoconductor for mammographic imaging**, Hao Jiang, Qihua Zhao, Youcef El-Mohri, Larry E. Antonuk, Univ. of Michigan (USA) . . . . . .[8313-15]

3:50 pm: **Effective detective quantum efficiency (eDQE) and effective noise equivalent quanta (eNEQ) for system optimization purposes in digital mammography**, Elena Salvagnini, UZ Leuven (Belgium) and SCK•CEN (Belgium); Hilde Bosmans, UZ Leuven (Belgium); Lara Struelens, SCK•CEN (Belgium); Nicholas W. Marshall, UZ Leuven (Belgium) . . . . . .[8313-16]

4:10 pm: **Lesion characterization using spectral mammography**, Björn Norell, Philips Women's Healthcare (Sweden); Erik Fredenberg, Björn Cederström, Royal Institute of Technology (Sweden); Karin Leifland M.D., Unilabs AB (Sweden); Mats Lundqvist, Philips Women's Healthcare (Sweden) . . . . . .[8313-17]

4:30 pm: **Investigating the relationship between calcification cluster detection in digital mammography and threshold gold thickness measurements**, Lucy M. Warren, Alistair Mackenzie, NCCPM, The Royal Surrey County Hospital NHS Trust (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); Dev P. Chakraborty, Univ. of Pittsburgh (USA); David R. Dance, Kenneth C. Young, NCCPM, The Royal Surrey County Hospital NHS Trust (UK) and Univ. of Surrey (UK). . . . . .[8313-18]

4:50 pm: **Model-based estimation of breast percent density in raw and processed full-field digital mammography images from image-acquisition physics and patient-image characteristics**, Brad M. Keller, Diane L. Nathan M.D., Emily F. Conant M.D., Despina Kontos, Univ. of Pennsylvania School of Medicine (USA) . . . . . .[8313-19]

5:10 pm: **Realistic simulation of breast mass appearance using random walk**, Alaleh Rashidnasab, Premkumar Elangovan, Mary Yip, Univ. of Surrey (UK); Kenneth C. Young, David R. Dance, The Royal Surrey County Hospital NHS Trust (UK); Kevin Wells, Univ. of Surrey (UK) . . . . . .[8313-20]

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Simulation and Modeling

Session Chairs: **Michael Miga,** Vanderbilt Univ. (USA); **Frank Sauer,** Siemens Corporate Research (USA)

3:30 pm: **Evaluation of deformation accuracy of a virtual pneumoperitoneum method based on clinical trials for patient-specific laparoscopic surgery simulator**, Masahiro Oda, Jia Di Qu, Yukitaka Nimura, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Kazunari Misawa M.D., Aichi Cancer Ctr. Research Institute (Japan); Kensaku Mori, Nagoya Univ. (Japan) . . . . . .[8316-15]

3:50 pm: **Neurosurgery simulation using nonlinear finite element modeling and haptic interaction**, Huai-Ping Lee, Kitware, Inc. (USA) and Univ. of North Carolina at Chapel Hill (USA); Michel Audette, Old Dominion Univ. (USA); Grand R. Joldes, The Univ. of Western Australia (Australia); Andinet Enquobahrie, Kitware, Inc. (USA) . . . . . .[8316-16]

4:10 pm: **Lung tumor motion prediction during lung brachytherapy using finite element model**, Zahra Shirzadi, Ali Sadeghi Naini, Abbas Samani, The Univ. of Western Ontario (Canada). . . . . .[8316-17]

4:30 pm: **A method for constructing real-time FEM-based simulator of stomach behavior with large-scale deformation by neural networks**, Ken'ichi Morooka, Tomoyuki Taguchi, Ryo Kurazume, Makoto Hashizume, Tsutomu Hasegawa, Kyushu Univ. (Japan) . . . . . .[8316-18]

4:50 pm: **Pectus excavatum postsurgical outcome based on preoperative soft body dynamics simulation**, Antonio H. J. Moreira, Pedro M. L. Rodrigues, Jaime C. Fonseca, A. C. M. Pinho, Univ. do Minho (Portugal); Nuno F. Rodrigues, Polytechnic Institute of Cávado and Ave (Portugal); Jorge Correia-Pinto, Univ. do Minho (Portugal); João L. Vilaça, Univ. do Minho (Portugal) and Polytechnic Institute of Cávado and Ave (Portugal) . . . . . .[8316-19]

5:10 pm: **Fusion of intraoperative force sensoring, surface reconstruction and biomechanical modeling,** Sebastian Röhl, Sebastian Bodenstedt, Christoph Küderle, Stefan Suwelack, Karlsruher Institut für Technologie (Germany); Beat-Peter Müller-Stich, Heidelberg School of Medicine (Germany); Rüdiger Dillmann, Stefanie Speidel, Karlsruher Institut für Technologie (Germany) . . . . . [8316-20]

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Image Segmentation and Morphological Analysis

Session Chairs: **Erik Leo Ritman,** Mayo Clinic (USA); **Anne Clough,** Marquette Univ. (USA); **Robert C. Molthen,** Medical College of Wisconsin (USA)

3:30 pm: **Semi-automated segmentation of carotid artery plaque volume from three dimensional ultrasound carotid imaging**, Daniel Buchanan, Igor Gyacskov, Eranga Ukwatta, Tamas Lindenmaier, Aaron Fenster, Grace Parraga, Robarts Research Institute (Canada) . . . . . .[8317-17]

3:50 pm: **Robust automated detection, segmentation and classification of hepatic tumors from CT data**, Marius George Linguraru, William Richbourg, Vivek Pamulapati, Shijun Wang, Ronald M. Summers M.D., National Institutes of Health (USA) . . . . . .[8317-18]

4:10 pm: **Automatic segmentation and 3D feature extraction of protein aggregates in caenorhabditis elegans**, Pedro M. L. Rodrigues, Antonio H. J. Moreira, Andreia Teixeira-Castro, Univ. do Minho (Portugal); Nuno Dias, Univ. do Minho (Portugal) and Instituto Politécnico do Cávado e do Ave (Portugal); Nuno F. Rodrigues, Instituto Politécnico do Cávado e do Ave (Portugal); João L. Vilaça, Univ. do Minho (Portugal) and Instituto Politécnico do Cávado e do Ave (Portugal). . . . . .[8317-19]

4:30 pm: **Combined SPHARM-PDM and entropy-based particle systems shape correspondence methodology**, Beatriz Paniagua, Lucile Bompard, The Univ. of North Carolina at Chapel Hill (USA); Josh Cates, Ross Whitaker, Manasi Datar, The Univ. of Utah (USA); Clement Vachet, Martin A. Styner, The Univ. of North Carolina at Chapel Hill (USA). . . . . .[8317-20]

4:50 pm: **Interactive generation of digital anthropomorphic phantoms from XCAT shape priors**, Clifford Lindsay, Michael A. Gennert, Worcester Polytechnic Institute (USA); Caitlin M. Connolly, Arda Konik, Univ. of Massachusetts Medical School (USA); Paul Dasari, Univ. of Massachusetts Medical School (USA) and Worcester Polytechnic Institute (USA); William P. Segars, Duke Univ. (USA); Michael A. King, Univ. of Massachusetts Medical School (USA) . . . . . .[8317-21]

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

SESSION 4
Room: Royal Palms. . . . . Sun. 3:30 to 5:30 pm

Clinical Applications and Diagnostics

Session Chairs: **Craig K. Abbey,** Univ. of California, Santa Barbara (USA); **Johan G. Bosch,** Erasmus Univ. Rotterdam (Netherlands)

3:30 pm: **Frequency, bandwidth, and information transfer in B-mode imaging**, Craig K. Abbey, Univ. of California, Santa Barbara (USA); Nghia Q. Nguyen, Michael F. Insana, Univ. of Illinois at Urbana-Champaign (USA) . . . . . .[8320-17]

3:50 pm: **Age and gender related differences in aortic blood flow**, Marie S. Enevoldsen, Technical Univ. of Denmark (Denmark); Mads Moller Pedersen M.D., Copenhagen Univ. Hospital Rigshopitalet (Denmark); Martin C. Hemmsen, Technical Univ. of Denmark (Denmark) and B-K Medical (Denmark); Lars Lönn, Copenhagen Univ. Hospital Rigshopitalet (Denmark); Kaj-Åge Henneberg, Jørgen A. Jensen, Technical Univ. of Denmark (Denmark). . . . . .[8320-18]

4:10 pm: **Clinical evaluation of synthetic aperture sequential beamforming**, Peter M. Hansen, Copenhagen Univ. Hospital Rigshopitalet (Denmark); Martin C. Hemmsen, Technical Univ. of Denmark (Denmark); Theis Lange, Univ. of Copenhagen (Denmark); Jens M. Hansen, Technical Univ. of Denmark (Denmark); Michael B. Nielsen, Copenhagen Univ. Hospital Rigshopitalet (Denmark); Jørgen A. Jensen, Technical Univ. of Denmark (Denmark). . . . . .[8320-19]

4:30 pm: **Thoracic wall reconstruction using ultrasound images to model/bend the thoracic prosthesis for correction of pectus excavatum**, João G. Fonseca, Antonio H. J. Moreira, Pedro M. L. Rodrigues, Jaime C. Fonseca, A. C. M. Pinho, Univ. do Minho (Portugal); Nuno F. Rodrigues, Univ. do Minho (Portugal) and Polytechnic Institute of Cávado (Portugal); Jorge Correia-Pinto, Univ. do Minho (Portugal); João L. Vilaça, Univ. do Minho (Portugal) and Polytechnic Institute of Cávado (Portugal) . . . . . .[8320-20]

4:50 pm: **Comparison of Naive Bayes and logistic regression for computer-aided diagnosis of breast masses using ultrasound imaging**, Theodore W. Cary, Alyssa Cwanger, Santosh S. Venkatesh, Emily F. Conant M.D., Chandra M. Sehgal, The Univ. of Pennsylvania Health System (USA). . . . . .[8320-21]

5:10 pm: **Ultrasound image-based respiratory motion tracking of organs**, Youngkyoo Hwang, Jung-Bae Kim, Yong Sun Kim, Won-Chul Bang, James D. K. Kim, Chang-Yeong Kim, Samsung Advanced Institute of Technology (Korea, Republic of). . . . . .[8320-22]

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

WORKSHOP
Regulatory Changes and New Opportunities in Biomedical Device Development
California Room · Sun. 5:45 to 7:45 pm
Kenneth H. Wong, Virginia Polytechnic Institute and State Univ. (USA)
For details see page 10.

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

5:10 pm: **3D reconstruction of prostate histology based on quantified tissue cutting and deformation parameters,** Eli D. Gibson, Robarts Research Institute (Canada); Cathie Crukley, Robarts Research Institute (Canada) and Lawson Health Research Institute (Canada); Jose A. Gomez, Madeleine Moussa, Glenn S. Bauman, The Univ. of Western Ontario (Canada); Aaron Fenster, Robarts Research Institute (Canada) and Lawson Health Research Institute (Canada) and The Univ. of Western Ontario (Canada); Aaron D. Ward, The Univ. of Western Ontario (Canada) and London Regional Cancer Program (Canada). . . . . [8317-22]

WORKSHOP
Open Source Software Tools for Lung Image Analysis
Golden West Room · Sun. 5:45 to 7:45 pm
Nicholas J. Tustison, Univ. of Virginia (USA)
For details see page 10.

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

Posters for this conference will be on display Sunday and Monday in the Grand Exhibit Hall. The interactive poster session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be announced in the conference meeting room on Tuesday morning.

Please put up your poster during the Sunday morning coffee break. Posters will 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.

Conference 8314 Posters
Image Processing

Registration

Landmark-based registration from thin plate spline to B-spline with incompressible and diffeomorphic constraints using finite element method, Guanglei Xiong, Stanford Univ. (USA) . . . . . [8314-60]

On the construction of topology-preserving deformations, Dominique Apprato, Univ. de Pau et des Pays de l'Adour (France); Christian Gout, Carole Le Guyader, Institut National des Sciences Appliquées de Rouen (France) . . . . . [8314-61]

Motion coherent image registration and demons: practical handling of deformation boundaries, Nathan D. Cahill, Rochester Institute of Technology (USA) . . . . . [8314-62]

Image registration method based on multiresolution for dual-energy subtraction radiography, Takahiro Kawamura, Norihiro Omae, Masahiko Yamada, Wataru Ito, FUJIFILM Corp. (Japan); Kiyosumi Kawamoto, Tsukasa Doi, Osaka Univ. Graduate School of Medicine (Japan). . . . . [8314-63]

3D-2D registration of cerebral angiograms based on vessel directions and intensity gradients, Uroš Mitrovic, Žiga Špiclin, Darko Štern, Primož Markelj, Boštjan Likar, Zoran Miloševic M.D., Franjo Pernuš, Univ. of Ljubljana (Slovenia). . . . . .[8314-64]

Improving point registration in dental cephalograms by two-stage rectified point translation transform, Weng-kong Tam D.D.S., Hsi-Jian Lee, Tzu Chi Univ. (Taiwan) . . . . . .[8314-65]

Robust registration of sparsely sectioned histology to ex-vivo MRI of temporal lobe resections, Maged Goubran, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Ali Khan, Cathie Crukley, Susan C. Buchanan, Brendan Santyr, Robarts Research Institute (Canada); Diego Cantor-Rivera, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Sandrine de Ribaupierre, Seyed Mirsattari, Robert Hammond, The Univ. of Western Ontario (Canada); Terry M. Peters, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada) . . . . .[8314-66]

Regularity-guaranteed transformation estimation in medical image registration, Bibo Shi, Jundong Liu, Ohio Univ. (USA) . . . . . .[8314-67]

Groupwise registration of dynamic cardiac perfusion images using temporal information and segmentation information, Dwarikanath Mahapatra, National Univ. of Singapore (Singapore) . . . . . .[8314-68]

Quantitative assessment of mis-registration issues of diffusion tensor imaging (DTI), Yue Li, Hangyi Jiang, Susumu Mori, The Johns Hopkins Univ. School of Medicine (USA) . . . . . .[8314-69]

Using fractional gradient information in nonrigid image registration: application to breast MRI, Andrew Melbourne, Univ. College London (UK); Nathan D. Cahill, Rochester Institute of Technology (USA); Christine Tanner, Marc Modat, David J. Hawkes, Sebastien Ourselin, Univ. College London (UK) . . . . . .[8314-70]

Multi-objective optimization for deformable image registration: proof of concept, Tanja Alderliesten, Jan-Jakob Sonke, The Netherlands Cancer Institute (Netherlands); Peter A. N. Bosman, Ctr. voor Wiskunde en Informatica (Netherlands). . . . . .[8314-71]

Automatic correspondence detection in mammogram and breast tomosynthesis images, Jan Ehrhardt, Julia Krüger, Univ. zu Lübeck (Germany); Arpad Bischof, Jörg Barkhausen, Universitaetsklinikum Schleswig-Holstein (Germany); Heinz Handels, Univ. zu Lübeck (Germany). . . . . [8314-72]

Liver 2D histology to 3D MR image registration using segmentation and point landmarks, Jihun Oh, Georgia Institute of Technology (USA); Diego Martin, Emory Univ. (USA); Oskar Skrinjar, Georgia Institute of Technology (USA) . . . . . [8314-73]

An image registration based ultrasound probe calibration, Xin Li, Dinesh Kumar, Saradwata Sarkar, Ram Narayanan, Eigen Inc. (USA) . . . . . [8314-74]

Medical image registration using machine learning-based interest point detector, Sergey Sergeev, Yang Zhao, San Francisco State Univ. (USA); Marius George Linguraru, National Institutes of Health (USA); Kazunori Okada, San Francisco State Univ. (USA) . . . . . [8314-75]

Automatic feature-point selection for image registration using disparity fitting, Damon Conover, Murray Loew, The George Washington Univ. (USA) . [8314-76]

Segmentation

Vessel segmentation using an iterative fast marching approach with directional prior, Wei Liao, Stefan Wörz, Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany) . . . . . [8314-77]

Adaptive epithelial cytoplasm segmentation and epithelial unit separation in immunoflurorescent images, Janakiramanan Ramachandran, Richard Scott, Peter O. Ajemba, Hrishikesh Karvir, Faisal M. Khan, Jack Zeineh, Michael J. Donovan, Gerardo Fernandez, Aureon Biosciences, Inc. (USA) . . [8314-78]

Nuclei extraction from histopathological images using a marked point process approach, Maria S. Kulikova, Institute for Infocomm Research (Singapore); Antoine Veillard, National Univ. of Singapore (Singapore); Ludovic Roux, Daniel Racoceanu, Institute for Infocomm Research (Singapore) . . . . . [8314-79]

A framework of whole heart extracellular volume fraction estimation for low dose cardiac CT images, Xinjian Chen, Ronald M. Summers M.D., Marcelo S. Nacif, Songtao Liu, David A. Bluemke, Jianhua Yao, National Institutes of Health (USA) . . . . . [8314-80]

Heart region segmentation from low-dose CT scans: an anatomy based approach, Anthony P. Reeves, Alberto M. Biancardi, Cornell Univ. (USA); David F. Yankelevitz M.D., Claudia I. Henschke M.D., Matthew D. Cham, The Mount Sinai Medical Ctr. (USA) . . . . . [8314-81]

Enhanced detection of the vertebrae in 2D CT-images, Franz Graf, Robert Greil, Hans-Peter Kriegel, Matthias Schubert, Ludwig-Maximilians-Univ. München (Germany); Alexander Cavallaro, Universitätsklinikum Erlangen (Germany) . . . . . [8314-82]

Metastatic liver tumor detection from 3D CT images using a level set algorithm with liver-edge term, Junichi Miyakoshi, Shuntaro Yui, Kazuki Matsuzaki, Hitachi, Ltd. (Japan) . . . . . [8314-83]

Fully automatic vertebra detection in x-ray images based on multiclass SVM, Fabian Lecron, Mohammed Benjelloun, Saïd Mahmoudi, Univ. de Mons (Belgium) . . . . . [8314-84]

Local label learning (L3) for multi-atlas based segmentation, Yongfu Hao, Institute of Automation (China); Jieqiong Liu, Yunyun Duan, Xinqing Zhang, Xuanwu Hospital of Capital Medical Univ. (China); Chunshui Yu, Tianjin Medical Univ. General Hospital (China); Tianzi Jiang, Yong Fan, Institute of Automation (China). . . [8314-85]

Automated anatomical labeling method for abdominal arteries extracted from 3D abdominal CT images, Masahiro Oda, Bui Huy Hoang, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Kazunari Misawa M.D., Aichi Cancer Ctr. Research Institute (Japan); Michitaka Fujiwara, Kensaku Mori, Nagoya Univ. (Japan) . . . . . [8314-86]

Computerized analysis of pelvic incidence from 3D images, Toma? Vrtovec, Univ. of Ljubljana (Slovenia); Michiel M. A. Janssen, Univ. Medical Ctr. Utrecht (Netherlands); Franjo Pernu?, Univ. of Ljubljana (Slovenia); René M. Castelein, Max A. Viergever, Univ. Medical Ctr. Utrecht (Netherlands) . . . . . [8314-87]

Incorporation of physical constraint in optimal surface search for renal cortex segmentation, Xiuli Li, Institute of Automation (China); Xinjian Chen, Jianhua Yao, National Institutes of Health (USA); Xing Zhang, Jie Tian, Institute of Automation (China) . . . . . [8314-88]

A parametric statistic model and fast algorithm for brain MR image segmentation and bias correction, Tianming Zhan, Zhihui Wei, Liang Xiao, Ling Qian, Nanjing Univ. of Science & Technology (China) . . . . . [8314-89]

Live-wire-based segmentation of (3D) anatomical structures for image-guided lung interventions, Kongkuo Lu, Philips Research North America (USA); Zhong Xue, Methodist Hospital Research Institute (USA); Sheng Xu, Philips Research North America (USA); Stephen Wong, Methodist Hospital Research Institute (USA) . . . . . [8314-90]

Semi-automatic intracranial tumor segmentation and tumor tissue classification based on multiple MR protocols, Astrid Franz, Philips Research (Germany); Henriette Tschampa, Andreas Müller, Universitätsklinikum Bonn (Germany); Stefanie Remmele, Christian Stehning, Jochen Keupp, Philips Research (Germany); Jürgen Gieseke, Philips Medizin Systeme GmbH (Germany); Hans H. Schild, Petra Mürtz, Universitätsklinikum Bonn (Germany) . . . . . [8314-91]

A multidimensional model for localization of highly variable objects, Heike Ruppertshofen, Fachhochschule Kiel (Germany); Thomas Bülow, Jens von Berg, Philips Research (Germany); Sarah Schmidt, Peter Beyerlein, Technische Fachhochschule Wildau (Germany); Zein I. Salah, Georg Rose, Otto-von-Guericke Univ. Magdeburg (Germany); Hauke Schramm, Fachhochschule Kiel (Germany) . . . . . [8314-92]

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A novel shape similarity based elastography system for prostate cancer assessment, Haisu Wang, Seyed Reza Mousavi, Abbas Samani, The Univ. of Western Ontario (Canada) . . . . . [8317-77]

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Post-processing multiple-frame super-resolution in ultrasound imaging, Morin Renaud, Marie Ploquin, Basarab Adrian, Kouamé Denis, Univ. Paul Sabatier (France) . . . . . [8320-53]

LBP texture-based classification of solid masses in ultrasound breast images, Monica M. Matsumoto, Chandra M. Sehgal, Hospital of the Univ. of Pennsylvania (USA); Jayaram K. Udupa, The Univ. of Pennsylvania Health System (USA) . . . . . [8320-54]

GPU accelerated implementation of ultrasound radio-frequency time series analysis, Jonathan C. Chung, Mohammad I. Daoud, The Univ. of British Columbia (Canada); Farhad Imani, Parvin Mousavi, Queen's Univ. (Canada); Purang Abolmaesumi, The Univ. of British Columbia (Canada). . . . . [8320-55]

Ultrasound speckle reduction using nonlinear Gaussian filters and nonlocal neighbourhoods, Sindhu Ramachandran, NeST (India); Manoj G. Nair, Varkala Hospital (India) . . . . . [8320-56]

Robust dynamic programming method for ultrasound elastography, Ioana N. Fleming, Hassan Rivaz, Emad Boctor, Gregory D. Hager, The Johns Hopkins Univ. (USA) . . . . . [8320-57]

Evaluation of finite element based simulation model of photoacoustics in biological tissues, Zhao-Hui Wang, Seung-Han Ha, Kang Kim, Univ. of Pittsburgh Medical Ctr. (USA) . . . [8320-58]

Tuesday/Wednesday Posters
see pages 41–49

Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 5
Room: Town & Country. . Mon. 8:00 to 9:40 am

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

8:00 am: **Improved diagnostic differentiation of renal cystic lesions with phase-contrast computed tomography (PCCT)**, Peter B. Noel, Marian S. Willner, Alexander Fingerle M.D., Julia Herzen, Daniela Münzel, Dieter Hahn, Ernst J. Rummeny, Franz Pfeiffer, Technische Univ. München (Germany) . . . . . [8313-21]

8:20 am: **Towards thick-object medical imaging with liquid-metal-jet x-ray sources**, Daniel H. Larsson, Per A. C. Takman, Ulf Lundström, Anna Burvall, Hans M. Hertz, Royal Institute of Technology (Sweden) . . . . . [8313-22]

8:40 am: **Anode thermal analysis of high power micro focus CNT x-ray tubes for in-vivo small animal imaging**, Jing Shan, Otto Zhou, Jianping Lu, The Univ. of North Carolina at Chapel Hill (USA) . . . . [8313-23]

9:00 am: **Series of 4D adult XCAT phantoms for imaging research and dosimetry**, Jason Bond, Jack Frush, Chris Eckersley, Cameron H. Williams, Duke Univ. (USA); Daniel J. Tward, John T. Ratnanather, Michael I. Miller, The Johns Hopkins Univ. (USA); Ehsan Samei, William P. Segars, Duke Univ. (USA) . . . . . [8313-24]

9:20 am: **New head equivalent phantom for task and image performance evaluation representative for neurovascular procedures occurring in the Circle of Willis**, Ciprian N. Ionita, Brendan Loughran, Amit Jain, S. N. Swetadri Vasan, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . [8313-25]

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

8313 continues on page 33

Conference 8314 continued
Image Processing
Room: San Diego

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

Segmentation I
Session Chair: **Tobias Heimann,** Deutsches Krebsforschungszentrum (Germany)

8:00 am: **A patient-specific segmentation framework for longitudinal MR images of traumatic brain injury**, Bo Wang, Marcel Prastawa, The Univ. of Utah (USA); Andrei Irimia, Micah C. Chambers, Paul M. Vespa, John D. Van Horn, Univ. of California, Los Angeles (USA); Guido Gerig, The Univ. of Utah (USA) . . . . . [8314-01]

8:20 am: **Comparison of threshold-based and watershed-based segmentation for the truncation compensation of PET/MR images**, Thomas Blaffert, Steffen Renisch, Philips Research (Germany); Zhiqiang Hu, Jing Tang, Manoj Narayanan, Philips Healthcare (USA) . . . . . [8314-02]

8:40 am: **Validation of model-based pelvis bone segementation from MR images for PET/MR attenuation correction**, Steffen Renisch, Thomas Blaffert, Philips Research (Germany); Jing Tang, Zhiqiang Hu, Philips Medical Systems (USA) . . . . . [8314-03]

9:00 am: **Automatic bone segmentation in knee magnetic resonance images using a coarse-to-fine strategy**, Sang Hyun Park, Seoul National Univ. (Korea, Republic of); Soochan Lee, SAMSUNG SDI Co., Ltd. (Korea, Republic of); Il Dong Yun, Hankuk Univ. of Foreign Studies (Korea, Republic of); Sang Uk Lee, Seoul National Univ. (Korea, Republic of). . . . . [8314-04]

9:20 am: **Fully automated prostate segmentation in 3D MR based on normalized gradient field cross-correlation initialization and LOGISMOS refinement**, Yin Yin, Sergei V. Fotin, Senthil Periaswamy, Justin Kunz, Hrishikesh Haldankar, Naira Muradyan, iCAD Inc. (USA); Francois Cornud, Ctr. d'Imagerie Medicale Tourville (France); Baris Turkbey, Peter L. Choyke, National Institutes of Health (USA) . . . . . [8314-05]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

2D/3D and Fluoroscopy
Session Chairs: **Jay B. West,** Accuray, Inc. (USA); **Wolfgang Birkfellner,** Medizinische Univ. Wien (Austria)

8:00 am: **Robust pigtail catheter tip detection in fluoroscopy**, Stratis Tzoumas, Peng Wang, Yefeng Zheng, Siemens Corporate Research (USA); Matthias John, Siemens Medical Solutions GmbH (Germany); Dorin Comaniciu, Siemens Corporate Research (USA) . . . . . [8316-21]

8:20 am: **Automatic localization of target vertebrae in spine surgery using fast CT-to-fluoroscopy (3D-2D) image registration**, Yoshito Otake, Sebastian Schafer, Joseph W. Stayman, Wojtek Zbijewski, The Johns Hopkins Univ. (USA); Gerhard Kleinszig, Rainer Graumann, Siemens AG (Germany); A. Jay Khanna, Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . [8316-22]

8:40 am: **2D-3D rigid registration to compensate for prostate motion during 3D TRUS-guided biopsy**, Tharindu S. De Silva, Aaron Fenster, Jeffrey S. Bax, Lori Gardi, Cesare Romagnoli, Robarts Research Institute (Canada); Jagath K. Samarabandu, Aaron D. Ward, The Univ. of Western Ontario (Canada) . . . . . [8316-23]

9:00 am: **Error analysis of the x-ray projection geometry of camera-augmented mobile C-arm**, Xin Chen, Lejing Wang, Pascal Fallavollita, Nassir Navab, Technische Univ. München (Germany) . . . . . [8316-24]

9:20 am: **Automatic pose initialization for accurate 2D/3D registration applied to abdominal aortic aneurysm endovascular repair**, Shun Miao, Joseph Lucas, Rui Liao, Siemens Corporate Research (USA) . . . . . [8316-25]

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

8316 continues on page 33

Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Nano-Scale Sensing, Therapy, and Imaging
Session Chairs: **John B. Weaver,** Dartmouth Hitchcock Medical Ctr. (USA); **Thorsten M. Buzug,** Univ. zu Lübeck (Germany)

8:00 am: **Imaging receptor-targeted binding in tumors requires a reference tracer**, Brian W. Pogue, Kenneth M. Tichauer, Kristian J. Sexton, Kimbereley Samkoe, Thayer School of Engineering at Dartmouth (USA) . . . . . [8317-23]

8:20 am: **MSB estimation of bound fraction: bias from binding energy uncertainty**, John B. Weaver, Dartmouth Hitchcock Medical Ctr. (USA) . . . [8317-24]

8:40 am: **Gold nanoparticle mediated thermal therapy**, R. Jason Stafford, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [8317-25]

9:00 am: **In vivo imaging and quantification of iron oxide nanoparticle uptake and biodistribution**, Paul J. Hoopes, Andrew J. Giustini, Dartmouth Medical School (USA); Alicia A. Petryk, Jennifer A. Tate, Dartmouth College (USA); Peter A. Kaufman, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA); John C. Bischof, Michael Etheridge, Michael Garwood, Univ. of Minnesota, Twin Cities (USA); John B. Weaver, Dartmouth Hitchcock Medical Ctr. (USA) . . . [8317-26]

9:20 am: **Single-sided magnetic particle imaging device for the sentinel lymph node biopsy scenario**, Timo F. Sattel, Marlitt Erbe, Sven Biederer, Tobias Knopp, Univ. zu Lübeck (Germany); Dominique Finas, Klaus Diedrich, Univ. Schleswig-Holstein (Germany); Kerstin Luedtke-Buzug, Univ. zu Lübeck (Germany); Joern Borgert, Philips Technologie GmbH (Germany); Thorsten M. Buzug, Univ. zu Lübeck (Germany) . . . . . [8317-27]

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

8317 continues on page 33

Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

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

Ultrasound Computer Tomography: Application
Session Chair: **Nicole V. Ruiter,** Karlsruher Institut für Technologie (Germany)

8:00 am: **Breast ultrasound tomography: bridging the gap to clinical practice**, Nebojsa Duric, Peter J. Littrup M.D., Karmanos Cancer Institute (USA); Cuiping Li, Delphinus Medical Technologies (USA); Olivier Roy, Karmanos Cancer Institute (USA); Steve Schmidt, Delphinus Medical Technologies (USA); Olsi Rama, Lisa Bey-Knight, Karmanos Cancer Institute (USA); Roman R. Janer, Xiayang Chen, Jeff Goll, Delphinus Medical Technologies (USA); William C. Greenway, Karmanos Cancer Institute (USA). . . . . [8320-23]

8:20 am: **Automatic multimodal 2D/3D image fusion of ultrasound computer tomography and x-ray mammography for breast cancer diagnosis**, Torsten Hopp, Karlsruher Institut für Technologie (Germany); Nebojsa Duric, Karmanos Cancer Institute (USA); Nicole V. Ruiter, Karlsruher Institut für Technologie (Germany) . . . . . [8320-24]

8:40 am: **Breast ultrasound tomography with a conventional linear array system**, Peter E. Huthwaite, Imperial College London (UK); Francesco Simonetti, Univ. of Cincinnati (USA) . . . . . [8320-25]

9:00 am: **Relationship between breast ultrasound tomography and mammography**, Mark A. Sak, Nebojsa Duric, Karmanos Cancer Institute (USA); Norman F. Boyd, Princess Margaret Hospital (Canada); Peter J. Littrup M.D., Karmanos Cancer Institute (USA); Erik West, Delphinus Medical Technologies (USA); Cuiping Li, Lisa Bey-Knight, Karmanos Cancer Institute (USA) [8320-26]

9:20 am: **Clinical performance parameters for breast ultrasound tomography: diagnostic and screening implications for commercial prototypes**, Peter J. Littrup M.D., Nebojsa Duric, Steve Schmidt, Cuiping Li, Olivier Roy, Karmanos Cancer Institute (USA) . . . . . [8320-27]

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

8320 continues on page 33

Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 6
Room: Town & Country. . . . . Mon. 10:10 am to 12:10 pm

Small Animal Imaging
Session Chairs: **John Yorkston,** Carestream Health Technology and Innovation Ctr. (USA); **Maria Drangova,** Robarts Research Institute (Canada)

10:10 am: **Preliminary results from a first preclinical x-ray phase-contrast CT scanner**, Astrid Velroyen, Arne Tapfer, Martin Bech, Technische Univ. München (Germany); Bart Pauwels, Peter Bruyndonckx, Xuan Liu, Alexander Sasov, SkyScan N.V. (Belgium); Franz Pfeiffer, Technische Univ. München (Germany) . . . . . [8313-26]

10:30 am: **X-ray fluorescence molecular imaging with high sensitivity**, Guohua Cao, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8313-27]

10:50 am: **Investigations on x-ray luminescence CT for small animal imaging**, Cristian T. Badea, Duke Univ. Medical Ctr. (USA); Ian N. Stanton, Duke Univ. (USA); Samuel M. Johnston, G. Allan Johnson, Duke Univ. Medical Ctr. (USA); Michael J. Therien, Duke Univ. (USA) . . . . . [8313-28]

11:10 am: **Evaluating the dose effects of a longitudinal micro-CT study on pulmonary tissue in C57BL/6 mice**, Sarah A. Detombe, Joy Dunmore-Buyze, Ivailo E. Petrov, Maria Drangova, Robarts Research Institute (Canada). . . . . [8313-29]

11:30 am: **A liquid xenon detector for PET applications: simulated performance**, Alice Miceli, Jackie Glister, TRIUMF (Canada); Andriy Andreyev, Douglas Bryman, The Univ. of British Columbia (Canada); Leonid Kurchaninov, Philip Lu, Astrid Muennich, Fabrice Retire, TRIUMF (Canada); Vesna Sossi, The Univ. of British Columbia (Canada) . . . . [8313-30]

11:50 am: **Non-contact detection of ultrasound applied to biomedical photoacoustic tomography and ultrasonography**, Guy Rousseau, Alain Blouin, Jean-Pierre Monchalin, National Research Council Canada (Canada) . . . . . [8313-31]

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

8313 continues on page 34

Conference 8314 continued
Image Processing
Room: San Diego

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

Registration I
Session Chair: **Daniel Rueckert,** Imperial College London (UK)

10:10 am: **Real-time 2D/3D registration for tumor motion tracking during radiotherapy**, Hugo D. Furtado, Christelle Gendrin, Christoph Bloch, Jakob Spoerk, Supriyanto Ardjo Pawiro, Christoph Weber, Michael Figl, Markus Stock, Dietmar Georg, Helmar Bergmann, Wolfgang Birkfellner, Medizinische Univ. Wien (Austria) . . . . . [8314-06]

10:30 am: **Robust elastic 2D/3D geometric graph matching**, Eduard Serradell, Institut de Robòtica i Informàtica Industrial (Spain); Jan Kybic, Czech Technical Univ. in Prague (Czech Republic); Francesc Moreno-Noguer, Institut de Robòtica i Informàtica Industrial (Spain); Pascal Fua, Ecole Polytechnique Fédérale de Lausanne (Switzerland). . . . . [8314-07]

10:50 am: **Nonrigid surface proximity registration of CT images considering the influence of pleural thickenings**, Peter Faltin, Kraisorn Chaisaowong, RWTH Aachen (Germany); Thomas Kraus, Univ. Hospital Aachen (Germany); Til Aach, RWTH Aachen (Germany) . . . . . [8314-08]

11:10 am: **Joint estimation of subject motion and tracer kinetic parameters of dynamic PET data in an EM framework**, Jieqing Jiao, Univ. of Oxford (UK); Cristian A. Salinas, Graham Searle, Roger N. Gunn, Imanova Ltd. (UK); Julia A. Schnabel, Univ. of Oxford (UK). . . . . [8314-09]

11:30 am: **Nonrigid registration and classification of the kidneys in 3D dynamic contrast enhanced (DCE) MR images**, Xiaofeng Yang, Pegah Ghafourian, Puneet Sharma, Khalil Salman, Diego Martin, Baowei Fei, Emory Univ. (USA) . . . . [8314-10]

11:50 am: **Super-resolution reconstruction for tongue MR images**, Jonghye Woo, Univ. of Maryland, Baltimore (USA) and The Johns Hopkins Univ. (USA); Ying Bai, HeartFlow, Inc. (USA); Snehashis Roy, Emi Z. Murano, The Johns Hopkins Univ. (USA); Maureen Stone, Univ. of Maryland, Baltimore (USA); Jerry L. Prince, The Johns Hopkins Univ. (USA) . . [8314-11]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Joint Session with 8320: Ultrasonic Imaging, Tomography, and Therapy

10:10 am: **Integration of 3D intraoperative ultrasound for enhanced neuronavigation** *(Keynote Presentation)*, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) and Dartmouth-Hitchcock Medical Ctr. (USA) and Norris Cotton Cancer Ctr., Dartmouth Medical School (USA); Songbai Ji, Alexander Hartov, Xiaoyao Fan, Thayer School of Engineering at Dartmouth (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA) and Norris Cotton Cancer Ctr., Dartmouth Medical School (USA) . . . . . [8320-28]

11:10 am: **Intra-operative monitoring of ablation using tracked 3D ultrasound elastography**, Pezhman Foroughi, Michael A. Choti M.D., Gregory D. Hager, The Johns Hopkins Univ. (USA); Emad Boctor, The Johns Hopkins Outpatient Ctr. (USA) . . . . . [8320-29]

11:25 am: **A new automatic landmarks extraction framework on ultrasound images of femoral condyles**, Agnès Masson-Sibut, Univ. Paris 12 - Val de Marne (France) and Aesculap SAS (France); Amir Nakib, Eric Petit, Univ. Paris 12 - Val de Marne (France); François Leitner, Aesculap SAS (France) . . . . . [8320-30]

11:40 am: **Tracked 3D ultrasound targeting with an active cannula**, Philip J. Swaney, Jessica Burgner, Thomas S. Pheiffer, D. Caleb Rucker, Hunter B. Gilbert, Janet E. Ondrake, Amber L. Simpson, Vanderbilt Univ. (USA); E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Michael I. Miga, Robert J. Webster III, Vanderbilt Univ. (USA). . . . . [8316-26]

11:55 am: **Intraoperative ultrasound to stereocamera registration using interventional photoacoustic imaging**, Saurabh Vyas, Steven Su, Robert Kim, Nathanael Kuo, Russell H. Taylor, Jin U. Kang, Emad M. Boctor, The Johns Hopkins Univ. (USA) . . . . . [8316-27]

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

8316 continues on page 34

Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Brain Function, Pathophysiology, and Neural Connectivity
Session Chairs: **Armando Manduca,** Mayo Clinic College of Medicine (USA); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (USA); **John B. Weaver,** Dartmouth Hitchcock Medical Ctr. (USA)

10:10 am: **A new methodology for phase-locking value: a measure of true dynamic functional connectivity**, Tianhu Lei, Dev Chakraborty, Kyongtae T. Bae, Univ. of Pittsburgh (USA); Timothy P. Roberts, Univ. of Pennsylvania (USA) . . . . . [8317-28]

10:30 am: **Differential spectral power alteration following acupuncture at different designated places revealed by magnetoencephalography**, Youbo You, Lijun Bai, Ruwei Dai, Institute of Automation (China); Ting Xue, Xidian Univ. (China); Chongguang Zhong, Zhenyu Liu, Hu Wang, Yuanyuan Feng, Wenjuan Wei, Institute of Automation (China); Jie Tian, Institute of Automation (China) and Xidian Univ. (China). . . . . [8317-29]

10:50 am: **Low-frequency pathophysiological characteristics of pediatric epileptic cortex during the interictal period detected using a dual-wavelength imaging system**, Yinchen Song, Po-Ching Chen, Florida International Univ. (USA); Sanjiv Bhatia M.D., John Ragheb, Prasanna Jayakar M.D., Miami Children's Hospital (USA); Wei-Chiang Lin, Florida International Univ. (USA) . [8317-30]

11:10 am: **Schizophrenia classification using fMRI-based functional network features**, Irina Rish, Guillermo A. Cecchi, IBM Thomas J. Watson Research Ctr. (USA); Kyle Heuton, Univ. of Minnesota, Twin Cities (USA) . . . . . [8317-31]

11:30 am: **Neural mechanism underlying autobiographical memory modulated by remoteness and emotion**, Ruiyang Ge, Yan Fu, Dahua Wang, Yao Li, Zhiying Long, Beijing Normal Univ. (China). . . . . [8317-32]

11:50 am: **Altered effective connectivity of default model brain network underlying amnestic MCI**, Hao Yan, Institute of Automation (China); Yonghui Wang, Shaanxi Normal Univ. (China); Chongguang Zhong, Jie Tian, Institute of Automation (China); Yijun Liu, Peking Univ. (China). . . . . [8317-33]

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

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: California

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

Keynote and Ultrasound
Session Chairs: **Kenneth H. Wong,** Virginia Polytechnic Institute and State Univ. (USA); **Marvin M. Doyley,** Univ. of Rochester

Joint Session with Conference 8316: Image-guided Procedures, Robotic Interventions, and Modeling

10:10 am: **Integration of 3D intraoperative ultrasound for enhanced neuronavigation** *(Keynote Presentation)*, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) and Dartmouth-Hitchcock Medical Ctr. (USA) and Norris Cotton Cancer Ctr., Dartmouth Medical School (USA); Songbai Ji, Alexander Hartov, Xiaoyao Fan, Thayer School of Engineering at Dartmouth (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA) and Norris Cotton Cancer Ctr., Dartmouth Medical School (USA) . . . . . [8320-28]

11:10 am: **Intra-operative monitoring of ablation using tracked 3D ultrasound elastography**, Pezhman Foroughi, Michael A. Choti M.D., Gregory D. Hager, The Johns Hopkins Univ. (USA); Emad Boctor, The Johns Hopkins Outpatient Ctr. (USA) . . . . . [8320-29]

11:25 am: **A new automatic landmarks extraction framework on ultrasound images of femoral condyles**, Agnès Masson-Sibut, Univ. Paris 12 - Val de Marne (France) and Aesculap SAS (France); Amir Nakib, Eric Petit, Univ. Paris 12 - Val de Marne (France); François Leitner, Aesculap SAS (France) . . . . . [8320-30]

11:40 am: **Tracked 3D ultrasound targeting with an active cannula**, Philip J. Swaney, Jessica Burgner, Thomas S. Pheiffer, D. Caleb Rucker, Hunter B. Gilbert, Janet E. Ondrake, Amber L. Simpson, Vanderbilt Univ. (USA); E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Michael I. Miga, Robert J. Webster III, Vanderbilt Univ. (USA). . . . . [8316-26]

11:55 am: **Intraoperative ultrasound to stereocamera registration using interventional photoacoustic imaging**, Saurabh Vyas, Steven Su, Robert Kim, Nathanael Kuo, Russell H. Taylor, Jin U. Kang, Emad M. Boctor, The Johns Hopkins Univ. (USA) . . . . . [8316-27]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 7
Room: Town & Country. .Mon. 1:20 to 3:40 pm

Photon Counting Systems and Techniques

Session Chairs: **Taly G. Schmidt,** Marquette Univ. (USA); **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ. (USA)

1:20 pm: **A comparison of dual kV energy integrating and energy discriminating photon counting detectors for dual energy x-ray imaging**, Adam S. Wang, Norbert J. Pelc, Stanford Univ. (USA) . . . . . [8313-32]

1:40 pm: **First results from a hybrid prototype CT scanner for exploring benefits of quantum-counting in clinical CT**, Steffen G. Kappler, Thilo Hannemann, Edgar Kraft, Bjoern Kreisler, Daniel Niederloehner, Karl Stierstorfer, Thomas Flohr, Siemens AG, Healthcare (Germany) . . . . . [8313-33]

2:00 pm: **Comprehensive evaluation of a silicon strip detector for photon-counting spectral computed tomography**, Cheng Xu, Mats E. Danielsson, Staffan Karlsson, Royal Institute of Technology (Sweden); Christer Svensson, Linköping Univ. (Sweden); Hans Bornefalk, Royal Institute of Technology (Sweden) . . . . . [8313-34]

2:20 pm: **Pulse pileup statistics for energy sensitive photon counting detectors with pulse height analysis**, Katsuyuki Taguchi, Somesh Srivastava, Qiulin Tang, The Johns Hopkins School of Medicine Outpatient Ctr. (USA); Brian S. Caffo, The Johns Hopkins Bloomberg School of Public Health (USA); Jan S. Iwanczyk, Neal E. Hartsough, William C. Barber, DxRay, Inc. (USA); Jochen Cammin, The Johns Hopkins School of Medicine Outpatient Ctr. (USA) . . [8313-35]

2:40 pm: **Extension of cascaded systems analysis to energy-resolving photon-counting x-ray detectors: The effects of conversion gain on the detective quantum efficiency**, Jesse Tanguay, Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . [8313-36]

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Conference 8314 continued
Image Processing
Room: San Diego

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

Keynote and Cardiac Applications

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

1:20 pm: **Imaging science and cardiology the heart of a good partnership** *(Keynote Presentation)*, Reza Razavi, King's College London (UK). . . . . [8314-12]

2:20 pm: **Representation of deformable motion for compression of dynamic cardiac image data**, 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). . . . . [8314-13]

2:40 pm: **Automatic detection of cardiac cycle and measurement of the mitral annulus diameter in 4D TEE images**, Bastian Graser, Deutsches Krebsforschungszentrum (Germany); Maximilian Hien, Helmut Rauch, UniversitätsKlinikum Heidelberg (Germany); Hans-Peter Meinzer, Tobias Heimann, Deutsches Krebsforschungszentrum (Germany). . . . . .[8314-14]

3:00 pm: **Feasibility of determining myocardial transient ischemic dilation from cardiac CT by automated stress/rest registration**, Jonghye Woo, Piotr J. Slomka, Ryo Nakazato, Balaji Tamarappoo, Guido Germano, Daniel S. Berman, Damini Dey, Cedars-Sinai Medical Ctr. (USA) . . . . . [8314-15]

3:20 pm: **Localised manifold learning for cardiac image analysis**, Kanwal Bhatia, Imperial College London (UK); Anthony Price, MRC Clinical Sciences Ctr. (UK); Jo V. Hajnal, Daniel Rueckert, Imperial College London (UK) . . . . . [8314-16]

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

8314 continues on page 35

Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Optical, Laparoscopic, and Needle Techniques

Session Chairs: **William E. Higgins,** The Pennsylvania State Univ. (USA); **Eric J. Seibel,** Univ. of Washington (USA)

1:20 pm: **Registration of partially overlapping surfaces for time-of-flight based augmented reality on mobile devices**, Lena Maier-Hein, Alexander Seitel, Thomas Kilgus, Alfred M. Franz, Markus Fangerau, Deutsches Krebsforschungszentrum (Germany); Laura Bartha, Queen's Univ. (Canada); Thiago R. dos Santos, Sven Mersmann, Anja Groch, Kwong Yung, Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany) . . . . . [8316-28]

1:40 pm: **The Kinect as an interventional tracking system**, Xiang L. Wang, Philipp J. Stolka, Daniel Carnegie, Emad Boctor, Michael A. Choti M.D., The Johns Hopkins Univ. (USA) . . . . . [8316-29]

2:00 pm: **Feasibility of optical detection of soft tissue deformation during needle insertion**, Christoph Otte, Gereon Hüttmann, Alexander Schlaefer, Univ. zu Lübeck (Germany) . . . . . [8316-30]

2:20 pm: **Surgical motion characterization in simulated needle insertion procedures**, Matthew S. Holden, Tamas Ungi, Derek Sargent, Robert McGraw, Gabor Fichtinger, Queen's Univ. (Canada). . . . . [8316-31]

2:40 pm: **Measurement of distances between anatomical structures using a translating stage with mounted endoscope**, Lueder A. Kahrs, Vanderbilt Univ. Medical Ctr. (USA); Gregoire Blachon, Vanderbilt Univ. (USA); Ramya Balachandran, Vanderbilt Univ. Medical Ctr. (USA); J. Michael Fitzpatrick, Vanderbilt Univ. (USA); Robert F. Labadie M.D., Vanderbilt Univ. Medical Ctr. (USA) . . . . . [8316-32]

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Optical Imaging and Analysis of Tissue, Cells, and Biological Samples

Session Chairs: **Yu Chen,** Univ. of Maryland, College Park (USA); **Andreas H. Hielscher,** Columbia Univ. (USA)

1:20 pm: **An automated approach for single-cell tracking in epifluorescence microscopy applied to E. coli growth analysis on microfluidics biochips**, Catalin Fetita, TELECOM & Management SudParis (France); Boris Kirov, Alfonso Jaramillo, Institute of Systems & Synthetic Biology (France); Christophe Lefevre, TELECOM & Management SudParis (France) . . . . . [8317-34]

1:40 pm: **Using a large area CMOS APS for direct chemiluminescence detection in western blotting electrophoresis**, Michela Esposito, Jane Newcombe, Univ. of Surrey (UK); Thalis Anaxagoras, Nigel M. Allinson, Univ. of Lincoln (UK); Kevin Wells, Univ. of Surrey (UK) . . . . . [8317-35]

2:00 pm: **Detection of cancer metastasis using a novel macroscopic multispectral method**, Hamed Akbari, Hongzheng Zhang, Luma H. Halig, Zhuo Chen, Baowei Fei, Emory Univ. (USA) . . . . . [8317-36]

2:20 pm: **Activation detection in fNIRS by cross wavelet coherence**, Xin Zhang, Institute of Automation (China); Haijing Niu, Yan Song, Beijing Normal Univ. (China); Yong Fan, Institute of Automation (China) . . . . . [8317-37]

2:40 pm: **Fast implementation for fluorescence tomography based on coordinate descent with limited measurements**, Zhenwen Xue, Jie Tian, Chenghu Qin, Ping Wu, Xin Yang, Institute of Automation (China). . . . . [8317-38]

3:00 pm: **Tomographic bioluminescence imaging by an iteratively re-weighted minimization**, Ping Wu, Kai Liu, Zhenwen Xue, Wei Guo, Chenghu Qin, Jie Tian, Institute of Automation (China). . . [8317-39]

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

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

Ultrasound Functional Imaging

Session Chair: **Marvin M. Doyley,** Univ. of Rochester (USA)

1:20 pm: **Improving the sensitivity of subharmonic imaging at high frequencies: a feasibility study**, Himanshu Shekhar, Marvin M. Doyley, Univ. of Rochester (USA) . . . . . [8320-31]

1:40 pm: **Self-demodulation effect on subharmonic response of ultrasound contrast agent**, Verya Daeichin, Telli Faez, Guillaume Renaud, Johan G. Bosch, Erasmus MC (Netherlands); Antonius F. W. van der Steen, Nico de Jong, Erasmus MC (Netherlands) and Interuniversity Cardiology Institute of the Netherlands (Netherlands). . . . . [8320-32]

2:00 pm: **Motion compensation of ultrasonic perfusion images**, Sebastian Schäfer, Otto-von-Guericke-Univ. Magdeburg (Germany); Kim Nylund, Odd Helge Gilja, Univ. of Bergen (Norway) and Helse Bergen Haukeland Univ. Hospital (Norway); Klaus D. Tönnies, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8320-33]

2:20 pm: **A high frequency ultrasound aided study of kinetics of drug delivery in tumor models**, Sason Torosean, Dartmouth College (USA); Jason Gunn, Thayer School of Engineering Dartmouth College (USA); Kimberley S. Samkoe, Dartmouth Hitchcock Medical Ctr. (USA); Kenneth M. Tichauer, Thayer School of Engineering at Dartmouth (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) and Dartmouth Hitchcock Medical Ctr. (USA); Marvin M. Doyley, Univ. of Rochester (USA). [8320-34]

2:40 pm: **Novel ultrasound elastography system for multifocal breast cancer assessment**, Abbas Samani, Shadi Shavakh, The Univ. of Western Ontario (Canada); Aaron Fenster, Robarts Research Institute (Canada). . . . . [8320-35]

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

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

3:00 pm: **Spectral response compensation for photon-counting clinical x-ray CT using sinogram restoration**, Somesh Srivastava, Jochen Cammin, George S. K. Fung, Benjamin M. W. Tsui, Katsuyuki Taguchi, The Johns Hopkins School of Medicine Outpatient Ctr. (USA) . . . . . [8313-37]

3:20 pm: **An empirical method for correcting the detector spectral response in energy-resolved CT**, Taly G. Schmidt, Marquette Univ. (USA) . [8313-38]

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

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Conference 8314 continued
Image Processing
Room: San Diego

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

3:00 pm: **Key-frame selection for robust pose estimation in laparoscopic videos**, Udo von Öhsen, J. Marek Marcinczak, Andres F. Marmol Velez, Rolf-Rainer Grigat, Technische Univ. Hamburg-Harburg (Germany). . . . . [8316-33]

3:20 pm: **Improving interaction in navigated surgery by combining a pan-tilt mounted laser and a pointer with triggering**, Darko Ojdanic, Longquan Chen, Heinz-Otto Peitgen, Fraunhofer MEVIS (Germany) . . . . . [8316-34]

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

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

3:20 pm: **Simultaneous vibration and high-speed microscopy to study mechanotransduction in living cells**, David W. Holdsworth, Hristo N. Nikolov, Jen Au, Kim Beaucage, Jessica Kishimoto, S. Jeffrey Dixon, The Univ. of Western Ontario (Canada). . . . . [8317-40]

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

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Conference 8320 continued
Ultrasonic Imaging, Tomography, and Therapy
Room: Royal Palms I-III

SESSION 7 continued
Room: Royal Palms. . . . . Mon. 1:20 to 3:40 pm

3:00 pm: **Tendon strain imaging using non-rigid image registration: a validation study**, Nuno M. Almeida, Pieter Slagmolen, Daniel Barbosa, Lennart Scheys, Leonie Geukens, Shingo Fukagawa, Koen Peers, Johan Bellemans, Paul Suetens, Jan D'Hooge, Katholieke Univ. Leuven (Belgium). . . . . [8320-36]

3:20 pm: **Motion analysis of ultrasound videos with applications to classification of carotid artery plaques,** Sergio Murillo, VisionQuest Biomedical, LLC (USA); Victor Murray, The Univ. of New Mexico (USA); Christos P. Loizou, Intercollege Limassol Campus (Armenia); Costantinos S. Pattichis, Univ. of Cyprus (Cyprus); Marios Pattichis, The Univ. of New Mexico (USA); E. Simon Barriga, VisionQuest Biomedical, LLC (USA) . . . . . [8320-37]

Poster Award Announcements
Room: Royal Palms. . . . . Mon. 3:40 to 3:45 pm

The Ultrasonic Imaging, Tomography, and Therapy conference poster award recipients will be recognized and certificates distributed.

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

Conf 8320 ENDS

Best Student Paper Award and Plenary Presentation

Monday 6 February · 4:00 to 5:00 pm · Room: Town & Country

Session Chairs: **Joseph Reinhardt,** The Univ. of Iowa (USA); **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

Student Paper Award Announcement

Plenary Presentation: **Engineering Medical Imaging in an Electronic and Flattened World: Meaningful Innovation and Translation**

Paul J. Chang, M.D., Univ. of Chicago School or Medicine and Univ. of Chicago Hospitals

Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

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

General Radiography and Fluoroscopy
Session Chairs: **John A. Rowlands,** Thunder Bay Regional Research Institute (Canada); **Hee-Joung Kim,** Yonsei Univ. (Korea, Republic of)

8:00 am: **Resolution enhancement of computed radiography images using two orthogonal tilts**, Steven I. Pollmann, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Chris J. D. Norley, Xunhua Yuan, David W. Holdsworth, Robarts Research Institute (Canada) . . . . . [8313-39]

8:20 am: **Ba_2CsI_5:Eu: a new bright scintillator for high frame rate x-ray imaging**, Harish B. Bhandari, Vladimir Gelfandbein, Elena Ovechkina, Stuart R. Miller, Vivek V. Nagarkar, Radiation Monitoring Devices, Inc. (USA) . . [8313-40]

8:40 am: **A robust small-signal approach to measuring the detective quantum efficiency of radiographic detectors in a clinical setting**, Michael McDonald, Robarts Research Institute (Canada); Ho Kyung Kim, Pusan National Univ. (Korea, Republic of); John H. Henry, London Health Sciences Ctr. (Canada); Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . [8313-41]

9:00 am: **Evaluation of intracranial aneurysm coil embolization in phantoms and patients using a high resolution microangiographic fluoroscope (MAF)**, Ciprian N. Ionita, Amit Jain, Brendan Loughran, S. N. Swetadri Vasan, Daniel R. Bednarek, Elad Levy M.D., Adnan Siddiqui M.D., L. N. Hopkins M.D., Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . [8313-42]

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Conference 8314 continued
Image Processing
Room: San Diego

SESSION 4
Room: San Diego . . . . . Tues. 8:00 to 9:40 am

Diffusion Imaging
Session Chair: **James C. Gee,** Univ. of Pennsylvania (USA)

8:00 am: **HARDI denoising using nonlocal means on S^2**, Alan Kuurstra, Sudipto Dolui, Oleg V. Michailovich, Univ. of Waterloo (Canada) . . . . . [8314-17]

8:20 am: **Measures for validation of DTI tractography**, Sylvain Gouttard, The Univ. of Utah (USA); Casey B. Goodlett, Kitware, Inc. (USA); Marek Kubicki, Brigham and Women's Hospital (USA); Guido Gerig, The Univ. of Utah (USA). . . . . [8314-18]

8:40 am: **Towards automatic quantitative quality control for MRI**, Carolyn Lauzon, Vanderbilt Univ. (USA); Brian S. Caffo, The Johns Hopkins Univ. (USA); Bennett A. Landman, Vanderbilt Univ. (USA). [8314-19]

9:00 am: **Using radial NMR profiles to characterize pore size distributions**, Rachid Deriche, John Treilhard, INRIA Sophia Antipolis - Méditerranée (France) . . . . . [8314-20]

9:20 am: **Efficient global fiber tracking on multidimensional diffusion direction maps,** Jan Klein, Benjamin Köhler, Horst K. Hahn, Fraunhofer MEVIS (Germany) . . . . . [8314-21]

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

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

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

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 1
Room: Royal Palms. . . . Tues. 8:00 to 9:40 am

Keynote and Digital Pathology
Session Chairs: **Bram van Ginneken,** Radboud Univ. Nijmegen (Netherlands); **Carol L. Novak,** Siemens Corporate Research (USA)

8:00 am: **Automated detection of retinal disease: when Moore's law meets Baumol's cost disease** *(Keynote Presentation)*, Michael D. Abramoff M.D., The Univ. of Iowa Hospitals and Clinics (USA) and Univ. of Iowa (USA). . . . . [8315-01]

9:00 am: **Automated detection of cells from immunohistochemically-stained tissues: application to Ki-67 nuclei staining**, Hatice Cinar Akakin, The Ohio State Univ. Medical Ctr. (USA) and Anadolu Univ. (Turkey); Hui Kong, Gerard Lozanski M.D., The Ohio State Univ. Medical Ctr. (USA); Camille Elkins, Jessica Hemminger, Barrie Miller, Jin Ming, Elizabeth Plocharczyk, Rachel Roth, Mitchell Weinberg, Rebecca Ziegler, The Ohio State Univ. (USA); Metin N. Gurcan, The Ohio State Univ. Medical Ctr. (USA) . . . [8315-02]

9:20 am: **Automated detection of diagnostically relevant regions in H&E stained digital pathology slides**, Claus Bahlmann, Amar H. Patel, Jeffrey P. Johnson, Jie Ni, Andrei Chekkoury, Parmeshwar K. Khurd, Ali Kamen, Leo Grady, Siemens Corporate Research (USA); Elizabeth A. Krupinski, Ronald S. Weinstein M.D., Anna R. Graham, The Univ. of Arizona (USA) . . . . . [8315-03]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

Prostate
Session Chairs: **Purang Abolmaesumi,** The Univ. of British Columbia (Canada); **Guy Shechter,** Philips Medical Systems (USA)

8:00 am: **An elastic registration framework to estimate prostate deformation in endorectal MR scan**, Muqing Lin, Vijay Parthasarathy, Harsh K. Agarwal, Philips Research North America (USA); Peter L. Choyke, Baris Turkbey, National Institutes of Health (USA); Tobias Klinder, Jochen Kruecker, Philips Research North America (USA) . . . . . [8316-35]

8:20 am: **Implicit active contours for automatic brachytherapy seed segmentation in fluoroscopy**, Eric Moult, Queen's Univ. (Canada); E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Danny Song M.D., Sidney Kimmel Comprehensive Cancer Ctr. (USA); Gabor Fichtinger, Queen's Univ. (Canada); Pascal Fallavollita, Technische Univ. München (Germany). . . . . [8316-36]

8:40 am: **Deformable prostate registration from MR and TRUS images using surface error driven FEM models**, Farheen Taquee, The Univ. of British Columbia (Canada); Orcun Goksel, ETH Zurich (Switzerland); S. Sara Mahdavi, The Univ. of British Columbia (Canada); Mira Keyes, James Morris, Ingrid Spadinger, British Columbia Cancer Agency (Canada); Septimiu E. Salcudean, The Univ. of British Columbia (Canada). . . . . [8316-37]

9:00 am: **A molecular image-directed, 3D ultrasound-guided biopsy system for the prostate**, Baowei Fei, David M. Schuster, Peter Nieh, Hamed Akbari, Xiaofeng Yang, Emory Univ. (USA); Aaron Fenster, Robarts Research Institute (Canada); Viraj Master, Emory Univ. (USA). . . . . [8316-38]

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

Skeletal and Bone Microstructure: Analysis and Assessment
Session Chairs: **Erik Leo Ritman,** Mayo Clinic (USA); **Axel Wismüller,** Univ. of Rochester Medical Ctr. (USA); **Robert C. Molthen,** Medical College of Wisconsin (USA)

8:00 am: **Application of anisotropic structure measures for the classification of micro-CT images of human trabecular bone**, Roberto A. Monetti, Max-Planck-Institut für extraterrestrische Physik (Germany); Jan S. Bauer, Technische Univ. München (Germany); Irina N. Sidorenko, Max-Planck-Institut für extraterrestrische Physik (Germany); Thomas H. Baum, Ernst J. Rummeny, Technische Univ. München (Germany); Maiko Matsuura, Ludwig-Maximilians-Univ. München (Germany); Felix Eckstein, Paracelsus Medizinische Privatuniversität (Austria); Eva-Maria Lochmueller, Ludwig-Maximilians-Univ. München (Germany); Philippe K. Zysset, Technische Univ. Wien (Austria); Christoph W. Raeth, Max-Planck-Institut für extraterrestrische Physik (Germany) .[8317-41]

8:20 am: **Exploring relationships between fractal dimension and trabecular bone characteristics**, Jeanpierre V. Guédon, Univ. de Nantes (France); Pauline Bléry, Yves Amouriq, Jean-Michel Bouler, Pierre Weiss, Ctr. Hospitalier Univ. de Nantes (France) . . . . . [8317-42]

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

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

9:20 am: **Region-of-interest micro-angiographic fluoroscope detector used in aneurysm and artery stenosis diagnoses and treatment,** Weiyuan Wang, Toshiba Stroke Research Ctr. (USA) and Univ. of Florida (USA); Ciprian N. Ionita, Ying Huang, Bin Qu, Ashish S. Panse, Amit Jain, Daniel R. Bednarek, Stephen Rudin, Toshiba Stroke Research Ctr. (USA) . . . . . [8313-43]

Poster Award Announcements
Room: Town & Country. . . . . Tues. 9:40 to 9:45 am

The Physics of Medical Imaging conference poster award recipients will be recognized and certificates distributed.

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

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Conference 8314 continued
Image Processing
Room: San Diego

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

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

9:20 am: **Development and preliminary evaluation of an ultrasonic motor actuated needle guide for 3T MRI-guided transperineal prostate interventions,** Sang-Eun Song, Junichi Tokuda, Clare Tempany, Kemal Tuncali, Nobuhiko Hata, Brigham and Women's Hospital (USA) and Harvard Medical School (USA) . . [8316-39]

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

Image-Guided Procedures, Robotic Interventions, and Modeling conference poster award recipients will be recognized and certificates distributed.

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

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

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

8:40 am: **Similarities and differences in the mass-structure scaling relations of the trabecular bone taken from different locations in the femur,** Christoph W. Raeth, Max-Planck-Institut für extraterrestrische Physik (Germany); Thomas H. Baum, Technische Univ. München (Germany); Irina N. Sidorenko, Roberto A. Monetti, Max-Planck-Institut für extraterrestrische Physik (Germany); Felix Eckstein, Paracelsus Medizinische Privatuniversität (Austria); Maiko Matsuura, Eva-Maria Lochmueller, Ludwig-Maximilians-Univ. München (Germany); Philippe K. Zysset, Technische Univ. Wien (Austria); Jan S. Bauer, Technische Univ. München (Germany) . . . . . [8317-43]

9:00 am: **Microarchitecture of irradiated bone: comparison with healthy bone**, Pauline Bléry, Yves Amouriq, Ctr. Hospitalier Univ. de Nantes (France); Aurore Arlicot, Nicolas Normand, Univ. de Nantes (France); Olivier Malard M.D., Pierre Weiss, Ctr. Hospitalier Univ. de Nantes (France); Jeanpierre V. Guédon, Univ. de Nantes (France). . . . . [8317-44]

9:20 am: **Fracture risk assessment: improved evaluation of vertebral integrity among metastatic cancer patients to aid in surgical decision-making through the use of an interactive clinical application,** Kurt E. Augustine, Jon J. Camp, David R. Holmes III, Lichun Lu, Michael J. Yaszemski M.D., Paul M. Huddleston M.D., Richard A. Robb M.D., Mayo Clinic (USA) . . . . . [8317-45]

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

The Biomedical Applications in Molecular, Structural, and Functional Imaging conference poster award recipients will be recognized and certificates distributed.

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 9
Room: Town & Country. . . . .Tues. 10:10 am to 12:10 pm

Cone Beam CT
Session Chairs: **Iacovos S. Kyprianou,** U.S. Food and Drug Administration (USA); **John Yorkston,** Carestream Health Technology and Innovation Ctr. (USA)

10:10 am: **Dose and scatter characteristics of a novel cone-beam CT system for musculoskeletal extremities**, Wojtek Zbijewski, The Johns Hopkins Univ. (USA); Alejandro Sisniega, Univ. Carlos III de Madrid (Spain) and The Johns Hopkins Univ. (USA); Juan Jose Vaquero, Univ. Carlos III de Madrid (Spain); Nathan Packard, Robert A. Senn, Dong Yang, John Yorkston, Carestream Health Technology and Innovation Ctr. (USA); John A. Carrino, The Johns Hopkins Outpatient Ctr. (USA); Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA). . . . [8313-44]

10:30 am: **Low-dose and scatter-free cone-beam CT imaging: a simulation study**, Xue Dong, Georgia Institute of Technology (USA); Xun Jia, Univ. of California, San Diego (USA); Tianye Niu, Lei Zhu, Georgia Institute of Technology (USA). . . . . .[8313-45]

10:50 am: **Initial results with a multisource inverse-geometry CT system**, Jongduk Baek, Norbert J. Pelc, Stanford Univ. (USA); Bruno De Man, Jorge Uribe, Daniel D. Harrison, Joseph Reynolds, Bogdan Neculaes, Louis Inzinna, Antonio Caiafa, GE Global Research (USA). . . . . [8313-46]

11:10 am: **Region-of-interest reconstruction on flat-panel angiography systems with the ATRACT algorithm**, Frank Dennerlein, Andreas K. Maier, Siemens Medical Solutions GmbH (Germany)[8313-47]

11:30 am: **Feasibility study of 3D cardiac imaging using a portable conebeam scanner**, Ivailo E. Petrov, Robarts Research Institute (Canada); Patrick A. Helm, Medtronic Navigation (USA); Maria Drangova, Robarts Research Institute (Canada). . . . . [8313-48]

11:50 am: **Breathing motion compensated reconstruction for C-arm cone beam CT imaging: initial experience based on animal data**, Dirk Schäfer, Philips Research (Germany); MingDe Lin, Philips Research North America (USA); Pramod Rao, Romaric Loffroy, Eleni Liapi, The Johns Hopkins Univ. School of Medicine (USA); Niels J. Noordhoek, Peter G. Eshuis, Alessandro Radaelli, Philips Healthcare (Netherlands); Michael Grass, Philips Research (Germany); Jeff Geschwind, The Johns Hopkins Univ. School of Medicine (USA). . . . . [8313-49]

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

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Conference 8314 continued
Image Processing
Room: San Diego

SESSION 5
Room: San Diego. . . Tues. 10:10 am to 12:10 pm

Shape: Applications and Methods
Session Chair: **Mads Nielsen,** Univ. of Copenhagen (Denmark)

10:10 am: **Efficient searching of globally optimal and smooth multisurfaces with shape priors**, Lei Xu, Univ. at Buffalo (USA) and The Univ. of Iowa (USA); Branislav Stojkovic, Hu Ding, Univ. at Buffalo (USA); Qi Song, Xiaodong Wu, Milan Sonka, The Univ. of Iowa (USA); Jinhui Xu, Univ. at Buffalo (USA) . [8314-22]

10:30 am: **A shape prior-based MRF model for 3D masseter muscle segmentation**, Tahir Majeed, Ketut Fundana, Marcel Luethi, Univ. Basel (Switzerland); Joerg Beinemann, Basel Univ. Hospital (Switzerland); Philippe C. Cattin, Univ. Basel (Switzerland) . [8314-23]

10:50 am: **Segmentation of parotid glands in head and neck CT images using a constrained active shape model with landmark uncertainty**, Antong Chen, Jack H. Noble, Kenneth J. Niermann, Matthew A. Deeley, Benoit M. Dawant, Vanderbilt Univ. (USA) . . . . . [8314-24]

11:10 am: **Classification of Alzheimer's disease patients with hippocampal shape, wrapper based feature selection and support vector machine**, Jonathan M. Young, Gerard Ridgway, Kelvin Leung, Sebastien Ourselin, Univ. College London (UK) . . . . . [8314-25]

11:30 am: **Consistent estimation of shape parameters in statistical shape model by symmetric EM algorithm**, Kaikai Shen, Pierrick T. Bourgeat, Jurgen E. Fripp, Australian e-Health Research Ctr. (Australia); Fabrice Meriaudeau, Univ. de Bourgogne (France); Olivier Salvado, Australian e-Health Research Ctr. (Australia). . . . . [8314-26]

11:50 am: **A hybrid framework of multiple active appearance models and global registration for 3D prostate segmentation in MRI**, Soumya Ghose, Univ. de Bourgogne (France); Arnau Oliver, Robert Martí, Xavier Lladó, Jordi Freixenet, Univ. de Girona (Spain); Jhimli Mitra, Univ. de Bourgogne (France); Joan C. Vilanova, Girona Magnetic Resonance Ctr. (Spain); Fabrice Meriaudeau, Univ. de Bourgogne (France) . . . . . [8314-27]

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

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 2
Room: Royal Palms. . . . . .Tues. 10:10 am to 12:10 pm

Breast
Session Chairs: **Nicholas A. Petrick,** U.S. Food and Drug Administration (USA); **Georgia Tourassi,** Oak Ridge National Lab. (USA)

10:10 am: **Detection of breast cancer in automated 3D breast ultrasound**, Tao Tan, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Bram Platel, Fraunhofer MEVIS (Germany); Roel Mus, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8315-04]

10:30 am: **Breast image feature learning with adaptive deconvolutional networks**, Andrew R. Jamieson, Karen Drukker, Maryellen L. Giger, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8315-05]

10:50 am: **Fully automated chest wall line segmentation in breast MRI by using context information**, Shandong Wu, Susan P. Weinstein, Emily F. Conant M.D., The Univ. of Pennsylvania Health System (USA); Russell Localio, Univ. of Pennsylvania School of Medicine (USA); Mitchell F. Schnall, Despina Kontos, The Univ. of Pennsylvania Health System (USA). . . . . [8315-06]

11:10 am: **Improving CAD performance by fusion of the bilateral mammographic tissue asymmetry information**, Xingwei Wang, Univ. of Pittsburgh Medical Ctr. (USA); Lihua Li, Wei Liu, Weidong Xu, Hangzhou Dianzi Univ. (China); Bin Zheng, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8315-07]

11:30 am: **Interactive content-based image retrieval (CBIR) computer-aided diagnosis (CADx) system for ultrasound breast masses using relevance feedback**, Hyun-Chong Cho, Lubomir M. Hadjiiski, Univ. of Michigan Health System (USA); Berkman Sahiner, U.S. Food and Drug Administration (USA); Heang-Ping Chan, Chintana Paramagul, Mark A. Helvie, Alexis V. Nees, Univ. of Michigan Health System (USA) . . . . . [8315-08]

11:50 am: **A content-based retrieval of mammographic masses using the curvelet descriptor**, Fabian R. Narváez, Gloria M. Díaz, Fabio A. González, Eduardo Romero M.D., Univ. Nacional de Colombia (Colombia). . . . . [8315-09]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

SESSION 9
Room: California . Tues. 10:10 am to 12:10 pm

Cardiac and Vascular
Session Chairs: **Terry Peters,** Robarts Research Institute (Canada); **Baowei Fei,** Emory Univ. (USA)

10:10 am: **Towards real-time 3D US-CT registration on the beating heart for guidance of minimally invasive cardiac interventions**, Feng Li, Pencilla Lang, Martin Rajchl, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Elvis C. S. Chen, Robarts Research Institute (Canada); Gerard M. Guiraudon, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada) and Lawson Health Research Institute (Canada); Terry M. Peters, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada) . . . . [8316-40]

10:30 am: **Multi-sequence magnetic resonance imaging integration framework for image-guided catheter ablation of scar-related ventricular tachycardia**, Qian Tao, Julien Milles, Carine van Huls van Taxis, Johan H. C. Reiber, Katja Zeppenfeld, Rob J. van der Geest, Leids Univ. Medisch Ctr. (Netherlands). . . . . [8316-41]

10:50 am: **An augmented reality platform for planning of minimally invasive cardiac surgeries**, Elvis C. S. Chen, Kripasindhu Sarkar, John Moore, Chris Wedlake, Terry M. Peters, Robarts Research Institute (Canada). . . . . [8316-42]

11:10 am: **Extended contrast detection on fluoroscopy and angiography for image guided trans-catheter aortic valve implantations (TAVI)**, Yinxiao Liu, The Univ. of Iowa (USA); Rui Liao, Xudong Lv, Siemens Corporate Research (USA). . . . . [8316-43]

11:30 am: **Multiple capture locations for 3D ultrasound-guided robotic retrieval of moving bodies from a beating heart**, Paul Thienphrapa, The Johns Hopkins Univ. (USA) and Philips Research North America (USA); Bharat Ramachandran, Haytham Elhawary, Philips Research North America (USA); Russell H. Taylor, The Johns Hopkins Outpatient Ctr. (USA); Aleksandra Popovic, Philips Research North America (USA) . . . . . [8316-44]

11:50 am: **Coronary arteries motion modeling using x-ray images**, Yang Gao, Hari Sundar, Siemens Corporate Research (USA) . . . . . [8316-45]

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

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 9
Room: Golden West . . . . . Tues. 10:10 am to 12:10 pm

Keynote and Hyperpolarized-Gas Magnetic Resonance Imaging and Analysis
Session Chairs: **Robert C. Molthen,** Medical College of Wisconsin (USA); **John B. Weaver,** Dartmouth Hitchcock Medical Ctr. (USA); **Nicholas J. Tustison,** Univ. of Virginia (USA)

10:10 am: **Hyperpolarized-gas MRI of the lung: Can research potential translate to clinical application?** *(Keynote Presentation/Presentation Only)*, John P. Mugler III, Univ. of Virginia (USA) . . . . . [8317-46]

11:10 am: **Two and three-dimensional segmentation of hyperpolarized 3He magnetic resonance functional imaging**, Mohammadreza Heydarian, Miranda Kirby, Andrew Wheatley, Aaron Fenster, Grace Parraga, Robarts Research Institute (Canada) . . . . . [8317-47]

11:30 am: **4D segmentation and normalization of 3He MR images for intra-subject assessment of ventilated lung volumes**, Benjamin Contrella, Nicholas J. Tustison, Talissa A. Altes, Univ. of Virginia (USA); Brian B. Avants, Univ. of Pennsylvania (USA); John P. Mugler III, Eduard E. de Lange, Univ. of Virginia (USA) . . . . . [8317-48]

11:50 am: **Correlation of measures of regional lung ventilation from 4DCT versus hyperpolarized helium-3 MR**, Kai Ding, Univ. of Virginia (USA); Kunlin Cao, The Univ. of Iowa (USA); Wilson Miller, Univ. of Virginia (USA); Gary E. Christensen, Joseph M. Reinhardt, The Univ. of Iowa (USA); Stanley Benedict, Bruce Libby, Univ. of Virginia (USA); Ke Sheng, Univ. of California, Los Angeles (USA) . . . [8317-49]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 10
Room: Town & Country. Tues. 1:20 to 3:00 pm

CT

Session Chairs: **Dianna D. Cody,** The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); **Marc Kachelriess,** Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)

1:20 pm: **New consistency theorem of motion contaminated projection data and applications in motion artifacts correction**, Jie Tang, Zhihua Qi, Timothy P. Szczykutowicz, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . [8313-50]

1:40 pm: **Efficacy of fixed filtration for rapid kVp-switching dual energy x-ray systems: experimental verification**, Yuan Yao, Adam S. Wang, Norbert J. Pelc, Stanford Univ. (USA). . . . . [8313-51]

2:00 pm: **Image-based synthetic CT: simulating arbitrary low dose single and dual energy protocols from dual energy images**, Adam S. Wang, Charles Feng, Norbert J. Pelc, Stanford Univ. (USA) . . . . . [8313-52]

2:20 pm: **Adaptive nonlocal means filtering based on local noise level for CT denoising**, Zhoubo Li, Lifeng Yu, Joshua D. Trzasko, Joel G. Fletcher, Cynthia H. McCollough, Armando Manduca, Mayo Clinic (USA) . . . . [8313-54]

2:40 pm: **A method for modulation transfer function determination from blood vessel profiles measured in computed tomography**, Yoshihiro Nakaya, Shizuoka Cancer Ctr. Research Institute (Japan); Yoshiki Kawata, Noboru Niki, Univ. of Tokushima (Japan); Hironobu Ohmatsu, Noriyuki Moriyama, National Cancer Ctr. Hospital East (Japan) [8313-53]

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

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Conference 8314 continued
Image Processing
Room: San Diego

SESSION 6
Room: San Diego . . . . . Tues. 1:20 to 3:00 pm

Segmentation II

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

1:20 pm: **Robust estimation of mammographic breast density: a patient-based approach**, Harald S. Heese, Klaus Erhard, André Goossen, Thomas Bülow, Philips Research (Germany) . . . . . [8314-28]

1:40 pm: **Image segmentation using random-walks on the histogram**, Christian Desrosiers, Luc Duong, Jean-Philippe Morin, Ecole de Technologie Supérieure (Canada). . . . . [8314-29]

2:00 pm: **Normalized gradient fields cross-correlation for automated detection of prostate in magnetic resonance images**, Sergei V. Fotin, Yin Yin, Senthil Periaswamy, Justin Kunz, Hrishikesh Haldankar, Naira Muradyan, iCAD, Inc. (USA); Francois Cornud, Ctr. d'Imagerie Medicale Tourville (France); Baris Turkbey, Peter L. Choyke, National Institutes of Health (USA) . . . . . [8314-30]

2:20 pm: **Automatic lung lobe segmentation of COPD patients using iterative B-spline fitting**, Denis P. Shamonin, Marius Staring, Els M. Bakker, Leids Univ. Medisch Ctr. (Netherlands); Changyan Xiao, Hunan Univ. (China); Jan Stolk, Johan H. C. Reiber, Berend C. Stoel, Leids Univ. Medisch Ctr. (Netherlands). . . . . [8314-31]

2:40 pm: **Iterative approach to joint segmentation of cellular structures**, Peter O. Ajemba, Richard Scott, Janakiramanan Ramachandran, Qiuhua Liu, Faisal M. Khan, Jack Zeineh, Michael J. Donovan, Gerardo Fernandez, Aureon Biosciences, Inc. (USA) . . . . . [8314-32]

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

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 3
Room: Royal Palms. . . . Tues. 1:20 to 3:00 pm

Oncology

Session Chairs: **Matthew S. Brown,** Univ. of California, Los Angeles (USA); **Axel Wismueller,** Univ. of Rochester Medical Ctr. (USA)

1:20 pm: **Automatic detection of axillary lymphadenopathy on CT scans of untreated chronic lymphocytic leukemia patients**, Jiamin Liu, Jeremy Hua, Vivek Chellappa, National Institutes of Health (USA); Nicholas A. Petrick, Berkman Sahiner, U.S. Food and Drug Administration (USA); Mohammed Farooqui, Gerald Marti, Adrian Wiestner, Ronald M. Summers M.D., National Institutes of Health (USA) . . . . . [8315-10]

1:40 pm: **Image-based computer-aided prognosis of lung cancer: predicting patient recurrent-free survival via a variational Bayesian mixture modeling framework for cluster analysis of CT histograms**, Yoshiki Kawata, Noboru Niki, Univ. of Tokushima (Japan); Hironobu Ohamatsu, National Cancer Ctr. Hospital East (Japan); Masahiko Kusumoto, National Cancer Ctr Hospital East (Japan); 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. Hospital East (Japan) . . . . . [8315-12]

2:00 pm: **A minimally interactive method to segment enlarged lymph nodes in 3D thoracic CT images using a rotatable spiral-scanning technique**, Lei Wang, Jan H. Moltz, Lars Bornemann, Horst K. Hahn, Fraunhofer MEVIS (Germany) . . . . . .[8315-11]

2:20 pm: **Multilevel feature extraction for skin lesion segmentation in dermoscopic images**, Sina KhakAbi, Paul Wighton, Tim K. Lee, Simon Fraser Univ. (Canada) and The Univ. of British Columbia (Canada) and The BC Cancer Agency Research Ctr. (Canada); M. Stella Atkins, Simon Fraser Univ. (Canada) and The Univ. of British Columbia (Canada) . . . . [8315-13]

2:40 pm: **Automated segmentation of tumors on bone scans using anatomy-specific thresholding**, Gregory H. Chu, Pechin Lo, Hyun J. Kim, Peiyun Lu, Bharath Ramakrishna, David W. Gjertson, Cheryce Poon M.D., Martin Auerbach, Jonathan G. Goldin, Matthew S. Brown, Univ. of California, Los Angeles (USA) . . . [8315-14]

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

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

SESSION 10
Room: California . . . . . Tues. 1:20 to 3:00 pm

Neuro and Head

Session Chairs: **Robert J. Webster III,** Vanderbilt Univ. (USA); **David R. Haynor,** Univ. of Washington (USA)

1:20 pm: **Variability of the temporal bone surface's topography: implication for otologic surgery**, Jérémy Lecoeur, Jack H. Noble, Vanderbilt Univ. (USA); Ramya Balachandran, Robert F. Labadie M.D., Vanderbilt Univ. Medical Ctr. (USA); Benoit M. Dawant, Vanderbilt Univ. (USA) [8316-46]

1:40 pm: **Registering stereovision surface with preoperative magnetic resonance images for brain shift compensation**, Xiaoyao Fan, Songbai Ji, Alexander Hartov, Thayer School of Engineering at Dartmouth (USA); David W. Roberts, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) . . . . . [8316-47]

2:00 pm: **A surgeon specific automatic path planning algorithm for deep brain stimulation**, Yuan Liu, Benoit M. Dawant, Srivatsan Pallavaram, Joseph Neimat, Peter Konrad, Pierre-Francois D'Haese, Ryan D. Datteri, Bennett A. Landman, Jack H. Noble, Vanderbilt Univ. (USA). . . . . [8316-48]

2:20 pm: **Automatic preoperative to intraoperative CT registration for image-guided cochlear implant surgery**, Fitsum A. Reda, Jack H. Noble, Vanderbilt Univ. (USA); Robert F. Labadie M.D., Vanderbilt Univ. Medical Ctr. (USA); Benoit M. Dawant, Vanderbilt Univ. (USA). . . . . [8316-49]

2:40 pm: **A system for saccular intracranial aneurysm analysis and virtual stent planning**, Sajjad Baloch, Sandra Sudarsky, Ying Zhu, Ashraf Mohamed, Berhard Geiger, Siemens Corporate Research (USA); Komal Dutta, Durga Namburu, Puthenveettil Nias, Gary Martucci, Siemens Medical Solutions USA, Inc. (USA); Thomas Redel, Siemens Medical Solutions GmbH (Germany) . . . . . [8316-50]

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

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Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 10
Room: Golden West . . . Tues. 1:20 to 3:00 pm

Lung Imaging and Motion Registration

Session Chairs: **Nicholas J. Tustison,** Univ. of Virginia (USA); **Amir A. Amini,** Univ. of Louisville (USA); **Anne Clough,** Marquette Univ. (USA)

1:20 pm: **A 3D optical flow technique based on mass conservation for deformable motion estimation from 4D CT images of the lung**, Mohammadreza Negahdar, Amir A. Amini, Univ. of Louisville (USA) . . . . . [8317-50]

1:40 pm: **An automated landmark-based elastic registration technique for large deformation recovery from 4D CT lung image**, Mohammadreza Negahdar, Albert Zacarias, Neal Dunlap, Shiao Y. Woo, Amir A. Amini, Univ. of Louisville (USA) [8317-51]

2:00 pm: **Estimation of lung lobar sliding using image registration**, Ryan Amelon, Kunlin Cao, Joseph M. Reinhardt, Gary E. Christensen, Madhavan L. Raghavan, The Univ. of Iowa (USA) . . . . . [8317-52]

2:20 pm: **Lung imaging in rodents using dual energy micro-CT**, Cristian T. Badea, Xiaolian Guo, Darin P. Clark, Samuel M. Johnston, Duke Univ. Medical Ctr. (USA); Craig Marshall, Claude A. Piantadosi, Duke Univ. (USA) . . . . . [8317-53]

2:40 pm: **Computer-assisted diagnostic tool to quantify the pulmonary veins in sickle cell associated pulmonary hypertension**, Guido H. Jajamovich, Vivek Pamulapati, Shoaib Alam, Alem Mehari, Gregory J. Kato, Bradford J. Wood, Marius George Linguraru, National Institutes of Health (USA) . . . . . [8317-54]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 11
Room: Town & Country. Tues. 3:30 to 4:50 pm

CT Detection Performance
Session Chairs: **Jinyi Qi,** Univ. of California, Davis (USA); **Bruce R. Whiting,** Univ. of Pittsburgh (USA)

3:30 pm: **Theoretical framework for the dual-energy cone-beam CT noise-power spectrum, NEQ, and tasked-based detectability index**, Grace J. Gang, Wojtek Zbijewski, Joseph W. Stayman, The Johns Hopkins Univ. (USA); John A. Carrino, The Johns Hopkins Outpatient Ctr. (USA); Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . [8313-55]

3:50 pm: **CT performance as a variable function of resolution, noise, and task property for iterative reconstructions**, Baiyu Chen, Samuel Richard, Duke Univ. (USA); Xiaodong Zhou, Siemens Medical Solutions USA, Inc. (USA); Olav Christianson, Ehsan Samei, Duke Univ. (USA) . . . . . [8313-56]

4:10 pm: **Detection performance study for cone-beam differential phase contrast CT**, Ke Li, Nicholas B. Bevins, Joseph N. Zambelli, Zhihua Qi, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [8313-57]

4:30 pm: **Correlation between model observer and human observer performance in CT imaging when lesion location is uncertain,** Shuai Leng, Lifeng Yu, Lingyun Chen, Juan Carlos Ramirez Giraldo, Cynthia H. McCollough, Mayo Clinic (USA) . . . . . [8313-58]

WORKSHOP
Evaluating Image Quality Performance in CT
Joint Workshop with 8318: Physics of Medical Imaging
Tues. 5:00 to 7:00 pm · Room: California
Craig K. Abbey, Univ. of California, Santa Barbara (USA); **Christoph Hoeschen,** Helmholtz Zentrum München GmbH (Germany); **Iacovos S. Kyprianou,** U.S. Food and Drug Administration (USA)
For details see page 11.

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Conference 8314 continued
Image Processing
Room: San Diego

SESSION 7
Room: San Diego . . . . . Tues. 3:30 to 4:50 pm

Label Fusion
Session Chair: **Bennett A. Landman,** Vanderbilt Univ. (USA)

3:30 pm: **Simultaneous segmentation and statistical label fusion**, Andrew J. Asman, Bennett A. Landman, Vanderbilt Univ. (USA) . . . . . [8314-33]

3:50 pm: **Manifold learning for atlas selection in multiatlas based segmentation of hippocampus**, Albert K. Hoang Duc, Marc Modat, Kelvin Leung, Jo Barnes, Nick .. Fox, Univ. College London (UK); Timor Kadir, Mirada Medical (UK); Sebastien Ourselin, Univ. College London (UK) . . . . . [8314-34]

4:10 pm: **Local SIMPLE multi atlas-based segmentation applied to lung lobe detection on chest CT**, Maruti Agarwal, Technische Univ. Delft (Netherlands); Els M. Bakker, Leids Univ. Medisch Ctr. (Netherlands); Emile A. Hendriks, Technische Univ. Delft (Netherlands); Berend C. Stoel, Johan H. C. Reiber, Marius Staring, Leids Univ. Medisch Ctr. (Netherlands) . . . . . [8314-35]

4:30 pm: **Generalized statistical label fusion using multiple consensus levels,** Zhoubing Xu, Andrew J. Asman, Vanderbilt Univ. (USA); Bennett A. Landman, Vanderbilt Univ. (USA) and The Johns Hopkins Univ. (USA) . . . . . [8314-36]

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 4
Room: Royal Palms. . . . Tues. 3:30 to 4:50 pm

Abdomen
Session Chairs: **Kenji Suzuki,** The Univ. of Chicago Medical Ctr. (USA); **Anant Madabhushi,** Rutgers, The State Univ. of New Jersey (USA)

3:30 pm: **Automated computer-aided detection of prostate cancer in MR images: from a whole-organ to a zone-based approach**, Geert Litjens, Jelle O. Barentsz M.D., Nico Karssemeijer, Henkjan J. Huisman, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [8315-15]

3:50 pm: **Maximal partial AUC feature selection in computer-aided detection of hepatocellular carcinoma in contrast-enhanced hepatic CT**, Jianwu Xu, Kenji Suzuki, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8315-16]

4:10 pm: **Automatic fetal weight estimation using 3D ultrasonography**, Shaolei Feng, Shaohua Zhou, Siemens Corporate Research (USA). . . . . [8315-17]

4:30 pm: **Segmentation of urinary bladder in CT urography (CTU) using CLASS,** Lubomir M. Hadjiiski, Heang-Ping Chan, Yuen Law, Richard H. Cohan M.D., Elaine M. Caoili M.D., Hyun-Chong Cho, Chuan Zhou, Jun Wei, Univ. of Michigan Health System (USA) . . . . . [8315-18]

WORKSHOP
Interactive Demonstrations
Tues. 5:00 to 7:00 pm · Grand Exhibit Hall
Stephen Aylward, Kitware, Inc. (USA) **Heang-Ping Chan,** Univ. of Michigan Health System (USA)
For details see page 11.

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Conference 8316 continued
Image-Guided Procedures, Robotic Interventions, and Modeling
Room: California

SESSION 11
Room: California . . . . . Tues. 3:30 to 4:50 pm

Lung and Liver
Session Chairs: **Ziv R. Yaniv,** Children's National Medical Ctr. (USA); **Steven L. Hartmann,** Medtronic Navigation (USA)

3:30 pm: **Bronchoscopy guidance system based on bronchoscope-motion measurements**, William E. Higgins, Duane C. Cornish, The Pennsylvania State Univ. (USA) . . . . . [8316-51]

3:50 pm: **Planning and visualization methods for effective bronchoscopic target localization**, Jason D. Gibbs, Broncus Technologies, Inc. (USA) and The Pennsylvania State Univ. (USA); Pinyo Taeprasarsit, Silpakorn Univ. (Thailand) and The Pennsylvania State Univ. (USA); William E. Higgins, The Pennsylvania State Univ. (USA) . . . . . [8316-52]

4:10 pm: **High-performance C-arm cone-beam CT guidance of thoracic surgery**, Sebastian Schafer, Yoshito Otake, Ali Uneri, Daniel J. Mirota, Sajendra Nithiananthan, Joseph W. Stayman, Wojciech Zbijewski, Marc S. Sussman M.D., The Johns Hopkins Univ. (USA); Gerhard Kleinszig, Rainer Graumann, Siemens AG (Germany); Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . [8316-53]

4:30 pm: **Fast CT-CT fluoroscopy registration with respiratory motion compensation for image-guided lung intervention**, Kongkuo Lu, Philips Research North America (USA); Po Su, Zhong Xue, Methodist Hospital Research Institute (USA); Jianhua Yang, Northwestern Polytechnical Univ. (China); Stephen Wong, Methodist Hospital Research Institute (USA) . . . . . [8316-54]

Conf 8316 ENDS

Conference 8317 continued
Biomedical Applications in Molecular, Structural, and Functional Imaging
Room: Golden West

SESSION 11
Room: Golden West . . . . Tues. 3:30 to 4:50 pm

Imaging and Analysis of Breast and Thoracic Tissue
Session Chairs: **Armando Manduca,** Mayo Clinic College of Medicine (USA); **John B. Weaver,** Dartmouth Hitchcock Medical Ctr. (USA)

3:30 pm: **Stepwise heterogeneity analysis of breast tumors in perfusion DCE-MRI datasets**, Mojgan Mohajer, Helmholtz Zentrum München GmbH (Germany); Volker J. Schmid, Ludwig-Maximilians-Univ. München (Germany); Nina Engels, Peter B. Noel, Ernst J. Rummeny, Technische Univ. München (Germany); Karl-Hans Englmeier, Helmholtz Zentrum München GmbH (Germany) . . . . . [8317-55]

3:50 pm: **Three-dimensional microwave imaging with incorporated prior structural information**, Amir H. Golnabi, Paul M. Meaney, Neil R. Espstein, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) . . . . . [8317-56]

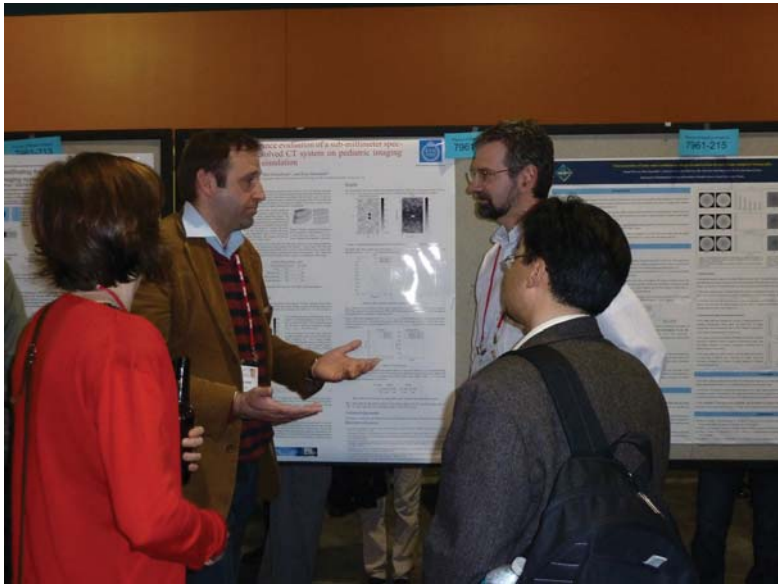
4:10 pm: **Magnetic resonance guided optical spectroscopy imaging of human breast cancer using a combined frequency domain and continuous wave approach**, Michael A. Mastanduno, Scott C. Davis, Shudong Jiang, Thayer School of Engineering at Dartmouth (USA); Roberta M. diFlorio-Alexander, Dartmouth Hitchcock Medical Ctr. (USA); Brian W. Pogue, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) . . . . . [8317-57]

4:30 pm: **Development and proof-of-concept of three-dimensional histology lung volumes**, Lindsay Mathew, Mostafa Alabousi, Andrew Wheatley, Mohammadreza Heydarian, Usaf Aladl, Robarts Research Institute (Canada); Deborah Slipetz, Merck Research Labs. (USA); James C. Hogg M.D., James Hogg Research Ctr. (Canada); Aaron Fenster, Grace Parraga, Robarts Research Institute (Canada) . . . . . [8317-58]

Conf 8317 ENDS

Participate in the Poster Sessions

Gain valuable feedback and one-on-one networking with colleagues.



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

Poster Authors: Please put up your poster during the Tuesday morning coffee break. Posters will 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

Conference 8313 Posters
Physics of Medical Imaging

CT

Automatic detection of rotational centers from projection data for micro-tomography in synchrotron radiation, Yongsheng Pan, Francesco De Carlo, Xianghui Xiao, Argonne National Lab. (USA) . . . . . [8313-80]

Ring artifact removal for micro-tomography in synchrotron radiation, Yongsheng Pan, Francesco De Carlo, Xianghui Xiao, Argonne National Lab. (USA) . . . . . [8313-81]

An efficient method to estimate noise in computed tomography images, Axel Thran, Ewald Roessl, Roland Proksa, Philips Research Innovative Technologies (Germany) . . . . . [8313-82]

Data normalization method for a multisource inverse geometry CT system, Jongduk Baek, Norbert J. Pelc, Stanford Univ. (USA). . . . . [8313-83]

Noise-reduction for helical CT using coupled projections, Yi Fan, Jianhua Ma, Hongbin Zhu, Yan Liu, Stony Brook Univ. (USA); Hongbing Lu, Fourth Military Medical Univ. (China); Zhengrong J. Liang, Stony Brook Univ. (USA). . . . . [8313-84]

The effect of source position accuracy on image quality in helical MDCT 3D image reconstruction, Amar C. Dhanantwari, Philips Medical Systems (USA); Qiu Wang, Cornell Univ. (USA); Nirmal Soni, Philips Medical Systems (USA) . . . . . [8313-85]

4D iterative reconstruction in cardiac CT, Herbert K. Bruder, Siemens Medical Solutions GmbH (Germany); Rainer Raupach, Johan Sunnegardh, Siemens HealthCare (Germany); Martin Sedlmair, Karl Stierstorfer, Thomas G. Flohr, Siemens Medical Solutions GmbH (Germany) . . . . . [8313-86]

Prior image constrained compressed sensing: a quantitative performance evaluation, Pascal Theriault Lauzier, Jie Tang, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [8313-87]

Variance estimation of x-ray CT sinogram in radon domain, Jianhua Ma, Zhengrong J. Liang, Yi Fan, Stony Brook Univ. Medical Ctr. (USA); Yan Liu, Stony Brook Univ. (USA); Jing Huang, Southern Medical Univ. (China); Lihong C. Li, College of Staten Island (USA); Wufan Chen, Southern Medical Univ. (China) . . [8313-88]

Investigation of temporal resolution required for CT coronary angiography, Kazuya Ohashi, Nagoya City Univ. (Japan) and Kanazawa Univ. (Japan); Katsuhiro Ichikawa, Kanazawa Univ. (Japan); Tatsuya Kawai, Yuta Shibamoto, Nagoya City Univ. (Japan). . . . . [8313-89]

Imaging performance in differential phase contrast CT compared with conventional CT-modulation transfer function and noise power spectrum, Xiangyang Tang, Yi Yang, Shaojie Tang, The Winship Cancer Institute of Emory Univ. (USA) . . . . . [8313-90]

Quantification of ring artifact visibility in CT, Mats Persson, Bettina Meyer, Hans Bornefalk, Mats E. Danielsson, Royal Institute of Technology (Sweden). [8313-91]

Image quality evaluation of iterative CT reconstruction algorithms: a perspective from spatial domain noise texture measures, Jan H. Pachon, Duke Univ. (USA); Girijesh Yadava, Debashish Pal, Jiang Hsieh, GE Healthcare (USA) . . . . . [8313-92]

Modeling scattered radiation from dose compensator in CT by forced detection Monte Carlo simulation, Negar Bazargani, Richard A. Thompson, Philips Healthcare (USA); Yoad Yagil, Philips Healthcare (Israel). . . . . [8313-93]

The CTDOR geometry: an optimized data treatment to demonstrate its potential, Claudia Brunner, Oleg Tischenko, Hugo de las Heras, Helmholtz Zentrum München GmbH (Germany); Bernhard C. Renger, Technische Univ. München (Germany); Helmut Schlattl, Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany) . . . . . [8313-94]

Accelerated augmented Lagrangian method for few-view CT reconstruction, Junfeng Wu, Xuanqin Mou, Xi'an Jiaotong Univ. (China) . . . . . [8313-95]

Relevance of MTF and NPS in quantitative CT: towards developing a predictable model of quantitative performance, Baiyu Chen, Samuel Richard, Ehsan Samei, Duke Univ. (USA) . . [8313-96]Room: Grand Exhibit Hall . . Wed. 5:30 to 7:00 pm

Cone-Beam CT

Investigation of image quality, geometric deformation and HU calibration in cone beam computed tomography (CBCT) using a new phantom, Christian Blendl, Markus Selbach, Clemens Uphoff, Fachhochschule Köln (Germany); Johannes M. Voigt, Martin Fiebich, Technische Hochschule Mittelhessen (Germany) . . . . . [8313-97]

Onboard cone beam CT with flexible image trajectories to improve image quality and longitudinal coverage: simulation and phantom study, Deshan Yang, Jun Tan, Hua Li, Sreekrishna M. Goddu, Harold Li, Washington Univ. in St. Louis (USA) . . . . . [8313-98]

Investigation of Fourier transform-based phase-retrieval approach for dynamic differential phase-contrast cone beam CT imaging, Weixing Cai, Ruola Ning, Yang Yu, Jiangkun Liu, Univ. of Rochester Medical Ctr. (USA) . . . [8313-99]

Investigation of source grating stepping for differential phase-contrast cone-beam CT (DPC-CBCT) system, Jiangkun Liu, Ruola Ning, Weixing Cai, Yang Yu, Univ. of Rochester Medical Ctr. (USA) . . . . . [8313-100]

Geometric calibration using bundle adjustment for cone-beam computed tomography devices, Alexander Ladikos, Wolfgang Wein, White Lion Technologies AG (Germany) . . . . . [8313-101]

Assessment of the central artefact in cone beam CT imaging with an offset geometry, Guozhi Zhang, Reinhilde Jacobs, Hilde Bosmans, UZ Leuven (Belgium) . . . . . [8313-102]

Low kV rotational 3D x-ray imaging for improved CNR of iodine contrast agent, Dirk Schäfer, Martin Ahrens, Philips Research (Germany); Peter G. Eshuis, Philips Healthcare (Netherlands); Michael Grass, Philips Research (Germany) . . . . . [8313-103]

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Development of optimized segmentation map in dual-energy computed tomography, Keisuke Yamakawa, Hironori Ueki, Hitachi, Ltd. (Japan). . . . . [8313-104]

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40th Anniversary Poster Session

40th Anniversary posters will be on display in the Grand Exhibit Hall.

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Overview of the 40-year history of the SPIE Medical Imaging meeting, Robert M. Nishikawa, The Univ. of Chicago (USA) . . . . . [8313-234]

Image perception at SPIE: Did you see what I saw?, Elizabeth A. Krupinski, The Univ. of Arizona (USA) . . . . . [8313-235]

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Gleason grading of prostate histology utilizing statistical shape model of manifolds (SSMM), Rachel E. Sparks, Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8315-54]

Incorporating the whole-mount prostate histology reconstruction program Histostitcher© into the extensible imaging platform (XIP) framework, Robert J. Toth, Jonathan C. Chappelow, Rutgers, The State Univ. of New Jersey (USA); Oliver Kutter, Christoph P. Vetter, Christoph Russ, Siemens Corporate Research (USA); Michael D. Feldman, John E. Tomaszewski M.D., Natalie Shih, Hospital of the Univ. of Pennsylvania (USA); Anant Madabhushi, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8315-55]

An integrated electronic colon cleansing for CT colonoscopy via MAP-EM segmentation and scale-based scatter correction, Hao Zhang, Stony Brook Univ. (USA); Lihong C. Li, College of Staten Island (USA); Hongbin Zhu, Qin Lin, Donald P. Harrington M.D., Zhengrong J. Liang, Stony Brook Univ. (USA) . . [8315-56]

Automated incision line determination for virtual unfolded view generation of the stomach from 3D abdominal CT images, Tomoaki Suito, Masahiro Oda, Nagoya Univ. (Japan); Takayuki Kitasaka, Aichi Institute of Technology (Japan); Gen Iinuma M.D., National Cancer Ctr. Hospital East (Japan); Kazunari Misawa M.D., Aichi Cancer Ctr. Hospital (Japan); Shigeru Nawano M.D., International Univ. of Health and Welfare (Japan); Kensaku Mori, Nagoya Univ. (Japan) . . . . . [8315-57]

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Size-adaptive hepatocellular carcinoma detection from 3D CT images based on the level set method, Shuntaro YUI, Hitachi, Ltd. (Japan) and Kyushu Univ. (Japan); Junichi Miyakoshi, Kazuki Matsuzaki, Hitachi, Ltd. (Japan); Toshiyuki Irie, Hitachi General Hospital (Japan); Ryo Kurazume, Kyushu Univ. (Japan) . [8315-60]

Medical image retrieval based on texture and shape feature co-occurrence, Yixiao Zhou, Yan Huang, Shandong Univ. (China); Haibin Ling, Temple Univ. (USA); Jingliang Peng, Shandong Univ. (China) . . . . . [8315-61]

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Nuclear cytoplasm cell evaluation from 3D optical CT microscope images, Anthony P. Reeves, Cornell Univ. (USA); Eric J. Siebel, Univ. of Washington (USA); Michael G. Meyer, VisionGate Inc. (USA); Tatiyana V. Apanasovich, Jefferson Medical College (USA); Alberto M. Biancardi, Cornell Univ. (USA) . . . . . [8315-121]

Detection of immunocytological markers in photomicroscopic images, David Friedrich, Joschka zur Jacobsmühlen, RWTH Aachen (Germany); Till Braunschweig, Univ. Hospital Aachen (Germany); André A. Bell, Kraisorn Chaisaowong, RWTH Aachen (Germany); Ruth Knüchel-Clarke, Univ. Hospital Aachen (Germany); Til Aach, RWTH Aachen (Germany) . . . . . [8315-122]

Automated detection of tuberculosis on sputum smeared slides using stepwise classification, Ajay Divekar, Corina Pangilinan, Signature Mapping Medical Sciences, Inc. (USA); Gerrit Coetzee M.D., National Institute for Communicable Diseases, NHLS (South Africa); Tarochan Sondh, Fleming Y. Lure, Sean Kennedy, Signature Mapping Medical Sciences, Inc. (USA) . . . . . [8315-123]

Computerized image analysis of cell-cell interactions in human renal tissue using multi-channel immunoflourescent microscopy, Yahui Peng, Yulei Jiang, Vladimir Liarski M.D., Marcus Clark, Maryellen L. Giger, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8315-124]

Neuro

Navigation-supported diagnosis of the substantia nigra by matching midbrain-sonography and MRI, Zein I. Salah, Otto-von-Guericke-Univ. Magdeburg (Germany); David Weise, Univ. Leipzig (Germany); Bernhard Preim, Otto-von-Guericke-Univ. Magdeburg (Germany); Joseph Classen, Univ. Leipzig (Germany); Georg Rose, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8315-125]

Quantification of the cerebrospinal fluid from a new whole body MRI sequence, Alain Lebret, Eric Petit, Bruno Durning, Univ. Paris 12 - Val de Marne (France); Jerôme Hodel M.D., Alain Rahmouni M.D., Philippe Decq M.D., C.H.U. Henri-Mondor (France) . . . . . [8315-126]

A new approach to measuring tortuosity, Sherry Scott, Marquette Univ. (USA); Amanda Wert, Benedictine College (USA) . . . . . [8315-127]

Information theoretic multiclass feature selection for improved pediatric brain tumor segmentation, Iftekharuddin Khan, Shaheen Ahmed, The Univ. of Memphis (USA); Arastoo Vossough, The Children's Hospital of Philadelphia (USA) . . [8315-128]

Automatic histogram-based segmentation of white matter hyperintensities using 3D FLAIR images, Rita Simões, Cornelis H. Slump, Univ. Twente (Netherlands); Christoph Moenninghoff, Isabel Wanke, Martha Dlugaj, Christian Weimar, Universitätsklinikum Essen (Germany) . . . . . [8315-129]

Conference 8318 Posters

Image Perception, Observer Performance, and Technology Assessment

Dose-optimized slice thickness and image noise for routine multislice computed tomography liver examinations, Karen L. Dobeli, The Univ. of Sydney (Australia) and Queensland Health (Australia); Sarah Lewis, Steven Meikle, The Univ. of Sydney (Australia); David Thiele, Queensland Health (Australia); Patrick Brennan, The Univ. of Sydney (Australia). . . . . [8318-37]

Collaborative labeling of malignant glioma with WebMILL: a first look, Eesha Singh, Andrew J. Asman, Zhoubing Xu, Lola Chambless, Reid Thompson, Bennett A. Landman, Vanderbilt Univ. (USA) . . . . . [8318-38]

Subjective evaluation of user experience in interactive 3D-visualization in a medical context, Sylvain Tourancheau, Mårten Sjöström, Roger Olsson, Mid Sweden Univ. (Sweden); Anders Persson, Ctr. for Medical Image Science and Visualization (Sweden); Thomas Ericson, Setred AB (Sweden); Johan Rudling, Ctr. for Medical Image Science and Visualization (Sweden); Bengt Norén, Univ. Hospital Linköping (Sweden) . . . . . [8318-39]

Implementation of combined SVM-based algorithm and computer-aided perception feedback for pulmonary nodule detection, Mariusz W. Pietrzyk, Didier Rannou, Patrick Brennan, The Univ. of Sydney (Australia). . . . . [8318-40]

Effect of morphing between unprocessed and multiscale enhanced chest radiographs on real pulmonary nodule localization, Mariusz W. Pietrzyk, The Univ. of Sydney (Australia); Fabian Zöhrer, Markus Herz, Fraunhofer MEVIS (Germany); Tamara M. Haygood, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . [8318-41]

Effect of selective suppression of spatial frequency domain noise on visual detection of a simple object in an inhomogeneous background, Mariusz W. Pietrzyk, The Univ. of Sydney (Australia); James S. McDonald, The Univ. of New South Wales (Australia); Patrick C. Brennan, Roger Bourne, The Univ. of Sydney (Australia). . . . . [8318-42]

Comparison of 2D versus 3D mammography with screening cases: an observer study, James Reza F. Fernandez, Ruchi R. Deshpande, Linda Hovanessian-Larsen, Andreas Lohr, Dirk Stoesser, Cord Neitzke, Brent J. Liu, The Univ. of Southern California (USA); Sangeeta Gupte, Kenji Yoshikawa, Akira Hasegawa, FUJIFILM Medical Systems USA, Inc. (USA) [8318-43]

A potential method to identify poor breast screening performance, Leng Dong, Yan Chen, Alastair G. Gale, Loughborough Univ. (UK); Dev P. Chakraborty, Univ. of Pittsburgh (USA) . . . . . [8318-44]

The effect of thinking aloud whilst searching for pulmonary nodules, Stephen Littlefair, Patrick C. Brennan, Warren Reed, Mark Williams, Mariusz W. Pietrzyk, The Univ. of Sydney (Australia) . . . . . [8318-45]

Observer performance in AFC experiments using physical and artificial lesions in chest CT images, Kent M. Ogden, Danielle Williams, Dalanda Jalloh, Marsha L. Roskopf, SUNY Upstate Medical Univ. (USA) . . . . . [8318-46]

A dual-detect fluorescence imaging analysis system to analyze FISH signals to assist cervical cancer diagnosis, Xingwei Wang, Univ. of Pittsburgh Medical Ctr. (USA); Shibo Li, Roy Zhang, The Univ. of Oklahoma Health Sciences Ctr. (USA); Yuhua Li, Hong Liu, The Univ. of Oklahoma (USA); Bin Zheng, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8318-47]

Assembly and evaluation of a training module and dataset with feedback for improved interpretation of digital breast tomosynthesis examinations, David Gur, Univ. of Pittsburgh Medical Ctr. (USA); Margarita L. Zuley, Jules H. Sumkin M.D., Christiane M. Hakim M.D., Linda S. Lovy, Cynthia M. Sobran, Magee-Womens Hospital (USA); Durwin N. Logue, Amy H. Klym, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8318-48]

Assessment of two mammographic density related features in predicting near-term breast cancer risk, Bin Zheng, Jules H. Sumkin M.D., Margarita L. Zuley, Xingwei Wang, Amy H. Klym, David Gur, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8318-49]

Evaluation of low contrast detectability performance using two-alternative forced choice method on computed tomography dose reduction algorithms, Jiahua Fan, Priti Madhav, Paavana Sainath, GE Healthcare (USA); Ximiao Cao, Haifeng Wu, GE Healthcare (China); Roy A. Nilsen, Adam Budde, Girijesh Yadava, Jiang Hsieh, GE Healthcare (USA) . . . . . [8318-50]

Classification of thyroid nodules using a resonance-frequency based electrical impedance spectroscopy: progress assessment, Bin Zheng, Mitchell E. Tublin, Dror Lederman, Amy H. Klym, Erica D. Brown, David Gur, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8318-51]

Registration of T2-weighted and diffusion-weighted MR images of the prostate: comparison between manual and landmark-based methods, Yahui Peng, Yulei Jiang, Fatma N. Soylu, Mark Tomek, William F. Sensakovic, Aytekin Oto, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8318-52]

A systematic review of automated melanoma detection in dermatoscopic images and its ground truth data, Abder-Rahman A. Ali, Thomas M. Deserno, RWTH Aachen (Germany) . . . . . [8318-54]

User-friendly tools on hand-held devices for observer performance study, Takuya Matsumoto, Takeshi Hara, Gifu Univ. School of Medicine (Japan); Junji Shiraishi, Kumamoto Univ. (Japan); Hiroyuki Abe, The Univ. of Chicago (USA); Xiangrong Zhou, Hiroshi Fujita, Gifu Univ. School of Medicine (Japan) . . . . . [8318-55]

Studying the relative impact of ghosting and noise on the perceived quality of MR images, Hantao Liu, Technische Univ. Delft (Netherlands); Jos Koonen, Miha Fuderer, Philips Medical Systems International B.V. (Netherlands); Ingrid Heynderickx, Philips Research Nederland B.V. (Netherlands) . . . . . [8318-56]

Combined collimator/reconstruction optimization for myocardial perfusion SPECT imaging using polar map based LROC numerical observer, Souleymane Konate, P. Hendrik Pretorius, Howard C. Gifford, J. Michael O'Connor, Michael A. King, Univ. of Massachusetts Medical School (USA). . . . . [8318-57]

Characterizing atherosclerotic plaque with computed tomography: a contrast-detail study, Nima Kasraie, Geoffrey D. Clarke, The Univ. of Texas Health Science Ctr. at San Antonio (USA) . . . . . [8318-58]

Quantifying effects of post-processing with visual grading regression, Örjan Smedby, Mats Fredrikson, Michael P. Sandborg, Jakob De Geer, Linköping Univ. (Sweden) . . . . . [8318-59]

The effect of compression on confidence during the detection of skull fractures in CT, Mark F. McEntee, The Univ. of Sydney (Australia); Ines Nikolovski, Royal North Shore Hospital (Australia); Roger Bourne, Mariusz Pietrzyk, The Univ. of Sydney (Australia); Micheal G. Evanoff, The American Board of Radiology (USA); Patrick Brennan, The Univ. of Sydney (Australia); Kevin Tay, Royal North Shore Hospital (Australia) . . . . . [8318-60]

3D brain MR angiography displayed by a multi-autostereoscopic screen, Daniel S. F. Magalhães, Fádua H. Ribeiro, Fabrício O. Lima, Univ. Estadual de Campinas (Brazil); Rolando L. Serra, Alfredo B. Moreno, Instituto Superior Politécnico José Antonio Echeverría (Cuba); Li M. Li, Univ. Estadual de Campinas (Brazil) . . . . . [8318-61]

NPS assessment of color medical displays using a monochromatic CCD camera, Hans Roehrig, The Univ. of Arizona (USA); Xiliang Gu, Image Quality, LLC (USA); Jiahua Fan, GE Healthcare (USA) . . . . . [8318-62]

Theoretical demonstration of image characteristics and image formation process depending on image displaying conditions on liquid crystal display, Asumi Yamazaki, Osaka General Medical Ctr. (Japan) and Graduate School of Medical Sciences, Nagoya Univ. (Japan); Katsuhiro Ichikawa, Kanazawa Univ. (Japan); Yoshie Kodera, Nagoya Univ. School of Medicine (Japan); Masao Funahashi, Osaka General Medical Ctr. (Japan). . . . . [8318-63]

Preliminary display comparison for dental diagnostic applications, Nicholas Odlum, Guillaume Spalla, Barco N.V. (Belgium); Nele van Assche, Bart Vandenberge, Reinhilde Jacobs, Marc Quirynen, UZ Leuven (Belgium); Cédric Marchessoux, Barco N.V. (Belgium) . . . . . [8318-64]

Impact of solid-state lighting on observer performance of color discrimination, Wei-Chung Cheng, Widad Tannous, Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [8318-65]

Using connectionist models to determine decision making strategy of pathology residents reading dermatopathology virtual slides, Claudia R. Mello-Thoms, Gregory Gardner, Univ. of Pittsburgh Cancer Institute (USA) [8318-66]

Conference 8319 Posters

Advanced PACS-based Imaging Informatics and Therapeutic Applications

Creating a semantic lesion database for computer-aided MR mammography, Xiaogang Wang, Anne Martel, Sunnybrook Health Sciences Ctr. (Canada) . . . [8319-32]

Teleradiology network system using the web medical image conference system with a new information security solution, Hitoshi Satoh, Tokyo Health Care Univ. (Japan) . . . . . [8319-33]

A comparison of image communication protocols in e-science platform for biomedical imaging research and applications, Tusheng Wang, Yuanyuan Yang, Jianguo Zhang, Shanghai Institute of Technical Physics (China). . . . . [8319-34]

Semantic extraction and processing of medical records for patient-oriented visual index, Weilin Zheng, Wenjie Dong, Jianguo Zhang, Shanghai Institute of Technical Physics (China). . . . . [8319-35]

A new approach of building 3D visualization framework for multimodal medical images display and computed assisted diagnosis, Zhenwei Li, Jianyong Sun, Jianguo Zhang, Shanghai Institute of Technical Physics (China). . . . . [8319-36]

MedCast: a discussion support system for cooperative work, Ramon A. Moreno, Instituto do Coração do Hospital das Clínicas (Brazil); Vinicius Lima, Isidro Lopes, Fundacao CPqD (Brazil); Marco A. Gutierrez, Instituto do Coração do Hospital das Clínicas (Brazil) . . . . . [8319-37]

A stand alone computer aided detection system with a novel 3D algorithm for small acute intracranial hemorrhage, Ximing Wang, James Reza F. Fernandez, Ruchi R. Deshpande, The Univ. of Southern California (USA); Tao Chan, The Univ. of Hong Kong (Hong Kong, China); Brent J. Liu, H. K. (Bernie) Huang, The Univ. of Southern California (USA) . . . . . [8319-38]

Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 12
Room: Town & Country. .Wed. 8:00 to 9:40 am

Dose

Session Chairs: **Christoph Hoeschen,** Helmholtz Zentrum München GmbH (Germany); **Dianna D. Cody,** The Univ. of Texas M.D. Anderson Cancer Ctr. (USA)

8:00 am: **Significance of including field non-uniformities such as the heel effect and beam scatter in the determination of the skin dose distribution during interventional fluoroscopic procedures**, Vijay Rana, Kamaljit K. Gill, Stephen Rudin, Daniel R. Bednarek, Univ. at Buffalo Toshiba Stroke Research Ctr. (USA) . . . . . [8313-59]

8:20 am: **MCNP simulation of absorbed energy and dose by iodinated contrast agent**, Wenjun He, Clemson Univ. (USA); Eugene Mah, Walter Huda, Medical Univ. of South Carolina (USA); Hai Yao, Clemson Univ. (USA) . . . . . [8313-60]

8:40 am: **CTDIvol: a suitable normalization for CT dose conversion coefficients at different tube voltages?**, Helmut Schlattl, Maria A. Zankl, Christoph Hoeschen, Helmholtz Zentrum München GmbH (Germany) . . . . . [8313-61]

9:00 am: **The relationship between organ dose and patient size in tube current modulated adult thoracic CT scans**, Maryam Khatonabadi, Di Zhang, Jeffrey Yang, John J. DeMarco, Christopher H. Cagnon, Michael McNitt-Gray, Univ. of California, Los Angeles (USA) . . . . . [8313-62]

9:20 am: **Estimation of patient size-related, scanner-independent dose and risk conversion coefficients for abdominopelvic CT: a study based on 92 patients**, Xiaoyu Tian, Xiang Li, William P. Segars, Donald Frush, Ehsan Samei, Duke Univ. Medical Ctr. (USA). . . . . [8313-63]

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

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Conference 8314 continued
Image Processing
Room: San Diego

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

Brain Applications

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

8:00 am: **Sparse regression analysis of task-relevant information distribution in the brain**, Irina Rish, Guillermo A. Cecchi, IBM Thomas J. Watson Research Ctr. (USA); Kyle Heuton, Univ. of Minnesota, Twin Cities (USA); Marwan N. Baliki, A. Vania Apkarian, Northwestern Univ. (USA) . . . . . [8314-37]

8:20 am: **A surface based approach for cortical thickness comparison between PiB+ and PiB- healthy control subjects**, Vincent Doré, Jurgen E. Fripp, Pierrick T. Bourgeat, Australian e-Health Research Ctr. (Australia); Oscar Acosta Tamayo, Univ. de Rennes 1 (France); Gael Chetelat, Univ. de Caen Basse-Normandie (France); Cassandra Szoeke, Commonwealth Scientific and Industrial Research Organisation (Australia); Kathryn A. Ellis, The Univ. of Melbourne (Australia); Ralph N. Martins, Edith Cowan Univ. (Australia); Victor L. Villemagne, Colin L. Masters, David Ames, Christopher C. Rowe, The Univ. of Melbourne (Australia); Olivier Salvado, Commonwealth Scientific and Industrial Research Organisation (Australia) . . . . . [8314-38]

8:40 am: **Simultaneous cortical surface labeling and sulcal curve extraction**, Zhen Yang, Aaron Carass, Chen Chen, Jerry L. Prince, The Johns Hopkins Univ. (USA) . . . . . [8314-39]

9:00 am: **fMRI alignment based on local functional connectivity patterns**, Di Jiang, Zhejiang Univ. (China); Yuhui Du, Hewei Cheng, Tianzi Jiang, Yong Fan, Institute of Automation (China). . . [8314-40]

9:20 am: **A comparison of distributional considerations with statistical analysis of resting state fMRI at 3T and 7T**, Xue Yang, Martha Holmes, Allen Newton, Victoria Morgan, Bennett A. Landman, Vanderbilt Univ. (USA) . . . . . [8314-41]

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

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 5
Room: Royal Palms. . . . .Wed. 8:00 to 9:40 am

Vascular

Session Chairs: **Stephen Aylward,** Kitware, Inc. (USA); **Susan Astley,** The Univ. of Manchester (UK)

8:00 am: **Automatic detection of coronary stent struts in intravascular OCT imaging**, Kai-Pin Tung, Wen-Zhe Shi, Luis Pizarro Quiroz, Hai-Yan Wang, Ricardo Guerrero Moreno, Ranil De Silva, Philip Edwards, Daniel Rueckert, Imperial College London (UK) . . . . . [8315-19]

8:20 am: **A robust automated method to detect stent struts in 3D intravascular optical coherence tomographic image sequences**, Ancong Wang, Jeroen Eggermont, Niels Dekker, Leids Univ. Medisch Ctr. (Netherlands); Hector Garcia-Garcia, Ravindra Pawar, Cardialysis B.V. (Netherlands); Johan H. C. Reiber, Jouke Dijkstra, Leids Univ. Medisch Ctr. (Netherlands). . . . . [8315-20]

8:40 am: **Estimation of prenatal aorta intima-media thickness in ultrasound examination**, Elisa Veronese, Enea Poletti, Erich Cosmi, Enrico Grisan, Univ. degli Studi di Padova (Italy). . . . . [8315-21]

9:00 am: **Pulmonary vessel segmentation utilizing curved planar reformation and optimal path finding (CROP) in computed tomographic pulmonary angiography (CTPA) for CAD applications**, Chuan Zhou, Heang-Ping Chan, Jean W. Kuriakose, Aamer R. Chughtai, Jun Wei, Lubomir M. Hadjiiski, Yanhui Guo, Smita Patel, Ella A. Kazerooni, Univ. of Michigan Health System (USA). . . . . [8315-22]

9:20 am: **Three-dimensional semi-automated segmentation of carotid atherosclerosis from three-dimensional ultrasound images**, Eranga Ukwatta, The Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada); Joseph Awad, Robarts Research Institute (Canada); Daniel Buchanan, The Univ. of Western Ontario (Canada); Grace Parraga, Aaron Fenster, The Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada) . . . . . [8315-23]

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

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Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

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

Technology Assessment

Session Chair: **Howard C. Gifford,** Univ. of Massachusetts Medical School (USA)

8:00 am: **CT detector evaluation with complex random backgrounds**, Helen Fan, Harrison H. Barrett, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8318-01]

8:20 am: **Reader behavior in a detection task using single- and multi-slice image datasets**, Asli E. Kumcu, Ljiljana Platiša, Univ. Gent (Belgium); Milan Platiša, TASS (Belgium); Ewout Vansteenkiste, Univ. Gent (Belgium); Karel Deblaere, Gent Univ. Hospital (Belgium); Aldo Badano, U.S. Food and Drug Administration (USA); Wilfried Philips, Univ. Gent (Belgium) . . . . . [8318-02]

8:40 am: **Veiling glare and detection tasks in large-luminance-range display: content dependent empirical model and validation**, Mina Choi, Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [8318-03]

9:00 am: **Visual grading regression with random effects**, Örjan Smedby, Mats Fredrikson, Jakob De Geer, Michael P. Sandborg, Linköping Univ. (Sweden) . . . . . [8318-04]

9:20 am: **Computational observer approach for sssessment of stereoscopic visualizations of 3D medical images**, Fahad Zafar, U.S. Food and Drug Administration (USA); John Dorband, NASA Goddard Space Flight Ctr. (USA); Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [8318-05]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 13
Room: Town & Country . . . . . Wed. 10:10 am to 12:10 pm

Reconstruction I
Session Chairs: **Guang-Hong Chen,** Univ. of Wisconsin School of Medicine and Public Health (USA); **Michael Grass,** Philips Technologie GmbH (Germany)

10:10 am: **Model-based 3D image reconstruction of objects with inexactly known components**, J. Webster Stayman, Yoshito Otake, Sebastian Schafer, A. Jay Khanna, Jerry L. Prince, Jeffrey H. Siewerdsen, The Johns Hopkins Univ. (USA) . . . . . [8313-64]

10:30 am: **Compensation of nonlinear distortions in photon-counting spectral CT: deadtime loss, spectral response, and beam hardening effects**, Jochen Cammin, Somesh Srivastava, Qiulin Tang, The Johns Hopkins School of Medicine (USA); William C. Barber, Jan S. Iwanczyk, Neal E. Hartsough, DxRay, Inc. (USA); Katsuyuki Taguchi, The Johns Hopkins School of Medicine (USA) . . . . . [8313-65]

10:50 am: **A fully four-dimensional, iterative motion estimation and compensation method for cardiac CT**, Qiulin Tang, Jochen Cammin, Somesh Srivastava, Katsuyuki Taguchi, The Johns Hopkins School of Medicine (USA) . . . . . [8313-66]

11:10 am: **A new image reconstruction method to improve noise properties in x-ray differential phase contrast computed tomography**, Ke Li, Nicholas B. Bevins, Joseph N. Zambelli, Guang-Hong Chen, Univ. of Wisconsin-Madison (USA) . . . . . [8313-67]

11:30 am: **Investigation of statistical iterative reconstruction for dedicated breast CT**, Andrey Makeev, Stephen J. Glick, Mini Das, Univ. of Massachusetts Medical School (USA). . . . . [8313-68]

11:50 am: **Accelerating ordered-subsets image reconstruction for x-ray CT using double surrogates**, Jang Hwan Cho, Jeffrey A. Fessler, Univ. of Michigan, Ann Arbor (USA). . . . . [8313-69]

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

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Conference 8314 continued
Image Processing
Room: San Diego

SESSION 9
Room: San Diego . . . . . Wed. 10:10 am to 12:10 pm

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

10:10 am: **Nearly rigid descriptor-based matching for volume reconstruction from histological sections**, Shaohui Sun, Nzola De Magalhaes, Nathan D. Cahill, Rochester Institute of Technology (USA) . . . . . [8314-42]

10:30 am: **Nonrigid free-form registration using landmark-based statistical deformation models**, Stefan Pszczolkowski, Luis Pizarro Quiroz, Ricardo Guerrero, Daniel Rueckert, Imperial College London (UK) . . . [8314-43]

10:50 am: **Estimation of rigid-body registration quality using registration networks**, Ryan D. Datteri, Benoit M. Dawant, Vanderbilt Univ. (USA) . . [8314-44]

11:10 am: **Registration of 3D spectral OCT volumes combining ICP with a graph-based approach**, Meindert Niemeijer, The Univ. of Iowa Hospitals and Clinics (USA); Kyungmoo Lee, The Univ. of Iowa (USA); Mona K. Garvin, Veterans Affairs Medical Ctr. (USA) and The Univ. of Iowa (USA); Michael D. Abramoff M.D., The Univ. of Iowa Hospitals and Clinics (USA); Milan Sonka, The Univ. of Iowa (USA) . . . . . [8314-45]

11:30 am: **Elastic registration based on matrix-valued spline functions and direct integration of landmarks and intensities**, Stefan Wörz, Andreas Biesdorf, Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany) . . . . . [8314-46]

11:50 am: **Minimally deformed correspondences between surfaces for intra-operative registration**, Thiago R. dos Santos, Caspar Goch, Alfred M. Franz, Hans-Peter Meinzer, Tobias Heimann, Lena Maier-Hein, Deutsches Krebsforschungszentrum (Germany). . . . . [8314-47]

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

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 6
Room: Royal Palms. . . . . Wed. 10:10 am to 12:10 pm

Lung
Session Chairs: **Catalin Fetita,** TELECOM & Management SudParis (France); **Rafael Wiemker,** Philips Research (Germany)

10:10 am: **Automatic classication of pulmonary function in COPD patients using trachea analysis in chest CT scans**, Eva M. van Rikxoort, Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Pim A. de Jong, Onno M. Mets, Univ. Medical Ctr. Utrecht (Netherlands); Bram van Ginneken, Univ. of California, Los Angeles (USA). . . . . [8315-24]

10:30 am: **Towards exaggerated emphysema stereotypes**, Chen Chen, Lauge Sørensen, Francois B. Lauze, Christian Igel, Univ. of Copenhagen (Denmark); Marco Loog, Technische Univ. Delft (Netherlands) and Univ. of Copenhagen (Denmark); Aasa Feragen, Univ. of Copenhagen (Denmark); Marleen de Bruijne, Erasmus MC (Netherlands) and Univ. of Copenhagen (Denmark); Mads Nielsen, Univ. of Copenhagen (Denmark) . . . . . [8315-25]

10:50 am: **An improved automatic computer aided tube detection and labeling system on chest radiographs**, Bharath Ramakrishna, Matthew S. Brown, Jonathan G. Goldin, Christopher H. Cagnon, Dieter R. Enzmann M.D., Univ. of California, Los Angeles (USA) . . . [8315-26]

11:10 am: **Detecting airway remodeling in COPD and emphysema using low-dose CT imaging**, Rina D. Rudyanto, Mario Ceresa, Arrate Muñoz-Barrutia, Carlos Ortiz-de-Solorzano, Univ. de Navarra (Spain) . . . . . [8315-27]

11:30 am: **Computerized scheme for lung nodule detection in multiprojection chest radiography**, Wei Guo, Qiang Li, Sarah J. Boyce, Ehsan Samei, Duke Univ. (USA) . . . . . [8315-28]

11:50 am: **Automated scoring of regional lung perfusion in children from contrast enhanced 3D MRI**, Tobias Heimann, Monika Eichinger, Grzegorz Bauman, Arved Bischoff, Michael Puderbach, Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany). . . . . [8315-29]

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

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Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

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

Image Display
Session Chair: **Mark F. McEntee,** The Univ. of Sydney (Australia)

10:10 am: **Stereoscopic versus monoscopic detection of masses on breast tomosynthesis projection images**, Gautam S. Muralidhar, Tejaswini Ganapathi, The Univ. of Texas at Austin (USA) and The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Alan C. Bovik, The Univ. of Texas at Austin (USA); Mia K. Markey, The Univ. of Texas at Austin (USA) and The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Tamara M. Haygood, Tanya W. Stephens, Gary J. Whitman M.D., The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [8318-06]

10:30 am: **The effect of fixed eye adaptation when using displays with a high luminance range**, Patrik Sund, Lars Gunnar Månsson, Magnus Båth, Sahlgrenska Univ. Hospital (Sweden) and Göteborg Univ. (Sweden) . . . . . [8318-07]

10:50 am: **Perceptual improvement of volume-rendered MR angiography data using a contour enhancement technique**, Kamyar Abhari, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); John S. H. Baxter, Robarts Research Institute (Canada); Sandrine de Ribaupierre, The Univ. of Western Ontario (Canada); Roy A. Eagleson, Terry M. Peters, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada) . . . . [8318-08]

11:10 am: **Soft display: a software simulator for color-managed liquid crystal displays**, Wei-Chung Cheng, Aldo Badano, U.S. Food and Drug Administration (USA) . . . . . [8318-09]

11:30 am: **Radiologists' eye gaze when reading cranial CT images**, Antje Venjakob, Technische Univ. Berlin (Germany); Tim Marnitz, Charité Universitätsmedizin Berlin (Germany); Jan Mahler, Simone Sechelmann, Matthias Rötting, Technische Univ. Berlin (Germany) . . . . . [8318-10]

11:50 am: **iPads and LCDs show similar performance in the detection of pulmonary nodules**, Mark F. McEntee, The Univ. of Sydney (Australia); Joanna Lowe, Marie Louise Butler, Univ. College Dublin (Ireland); Mariusz Pietrzyk, The Univ. of Sydney (Australia); Micheal G. Evanoff, The American Board of Radiology (USA); Patrick Brennan, The Univ. of Sydney (Australia); Louise Rainford, Univ. College Dublin (Ireland) . . . . . [8318-11]

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

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Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 14
Room: Town & Country. .Wed. 1:20 to 3:00 pm

Tomosynthesis Reconstruction
Session Chairs: **John M. Sabol,** GE Healthcare (USA); **Iacovos S. Kyprianou,** U.S. Food and Drug Administration (USA)

1:20 pm: **3D biopsy for tomosynthesis: simulation of prior information reconstruction for dose and artifact reduction**, Yuan Lin, Sujata V. Ghate M.D., Ehsan Samei, Duke Univ. (USA) . . [8313-70]

1:40 pm: **Differential phase contrast tomosynthesis imaging**, Ke Li, Nicholas Bevins, Joseph Zambelli, Guang-Hong Chen, Univ. of Wisconsin School of Medicine and Public Health (USA) [8313-71]

2:00 pm: **Generalized filtered back-projection for digital breast tomosynthesis**, Klaus Erhard, Michael Grass, Philips Research (Germany); Sebastian Hitziger, Armin Iske, Univ. Hamburg (Germany); Tim Nielsen, Philips Research (Germany). . . . . [8313-72]

2:20 pm: **Effect of postreconstruction filter strength on microcalcification and mass detection at different imaging doses in digital breast tomosynthesis: human and model observer studies**, Mini Das, Univ. of Houston (USA); Caitlin M. Connolly, Stephen J. Glick, Howard C. Gifford, Univ. of Massachusetts Medical School (USA). . . . . [8313-73]

2:40 pm: **Multiscale regularized reconstruction for enhancing microcalcification in digital breast tomosynthesis**, Yao Lu, Heang-Ping Chan, Jun Wei, Lubomir M. Hadjiiski, Chuan Zhou, Univ. of Michigan Health System (USA) . . . . . [8313-74]

Extended Coffee Break . . . 3:00 to 3:50 pm

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Conference 8314 continued
Image Processing
Room: San Diego

SESSION 10
Room: San Diego . . . . . .Wed. 1:20 to 3:00 pm

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

1:20 pm: **Automatic detection and segmentation of renal lesions in 3D contrast-enhanced ultrasound images**, Raphael Prevost, Philips France (France) and CEREMADE, Univ. Paris Dauphine (France); Laurent Cohen, CEREMADE, Univ. Paris Dauphine (France); Jean-Michel Correas, Hôpitaux Necker-Enfants Malades (France); Roberto Ardon, Philips Healthcare (France) . . . . . [8314-48]

1:40 pm: **Lesion segmentation and bias correction in breast ultrasound B-mode images including elastography information**, Gerard Pons, Joan Martí, Robert Martí, Mariano Cabezas, Univ. de Girona (Spain); Andrew Di Battista, J. Alison Noble, Univ. of Oxford (UK)[8314-49]

2:00 pm: **Real-time segmentation in 4D ultrasound with continuous Max-Flow**, Martin Rajchl, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada); Jing Yuan, The Univ. of Western Ontario (Canada); Terry M. Peters, Robarts Research Institute (Canada). . . . . [8314-50]

2:20 pm: **Incorporation of texture-based features in optimal graph-theoretic approach with application to the 3D segmentation of intraretinal surfaces in SD-OCT volumes**, Bhavna J. Antony, The Univ. of Iowa (USA); Michael D. Abramoff M.D., The Univ. of Iowa Hospitals and Clinics (USA); Milan Sonka, The Univ. of Iowa (USA); Young H. Kwon, The Univ. of Iowa Hospitals and Clinics (USA); Mona K. Garvin, U. S. Dept. of Veterans Affairs (USA) . . . . . [8314-51]

2:40 pm: **Parallel graph search: application to intraretinal layer segmentation of 3D macular OCT scans**, Kyungmoo Lee, Michael D. Abramoff M.D., The Univ. of Iowa (USA); Mona K. Garvin, Veterans Affairs Medical Ctr. (USA) and The Univ. of Iowa (USA); Milan Sonka, The Univ. of Iowa (USA). . . . . [8314-52]

Extended Coffee Break . . . 3:00 to 3:50 pm

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 7
Room: Royal Palms. . . . .Wed. 1:20 to 3:00 pm

Colon
Session Chairs: **Janne J. Nappi,** Massachusetts General Hospital (USA); **Metin N. Gurcan,** The Ohio State Univ. Medical Ctr. (USA)

1:20 pm: **Computer-aided detection of polyps in CT colonography by means of AdaBoost**, Jianwu Xu, Kenji Suzuki, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8315-30]

1:40 pm: **Automated classification of colon polyps in endoscopic image data**, Sebastian Gross, RWTH Aachen (Germany) and Univ. Hospital Aachen (Germany); Stephan Palm, RWTH Aachen (Germany); Jens J. W. Tischendorf M.D., Univ. Hospital Aachen (Germany); Alexander Behrens, RWTH Aachen (Germany); Christian Trautwein M.D., Univ. Hospital Aachen (Germany); Til Aach, RWTH Aachen (Germany) . . . . . [8315-31]

2:00 pm: **Automatic colonic fold segmentation for computed tomography colonography**, Hongbin Zhu, Matthew Barish, Stony Brook Univ. (USA); Lihong C. Li, College of Staten Island (USA); Bowen Song, Donald Harrington, Stony Brook Univ. (USA); Perry J. Pickhardt M.D., Univ. of Wisconsin-Madison (USA); Zhengrong Liang, Stony Brook Univ. (USA) . . . . . [8315-32]

2:20 pm: **Automated detection of colorectal lesions with dual-energy CT colonography**, Janne J. Näppi, Massachusetts General Hospital (USA); Hiroyuki Yoshida, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Se Hyung Kim, Seoul National Univ. Hospital (Korea, Republic of). . . . . [8315-33]

2:40 pm: **Computer-aided marginal artery detection on computed tomographic colonography**, Zhuoshi Wei, Jianhua Yao, Weidong Zhang, Shijun Wang, Jiamin Liu, Ronald M. Summers M.D., National Institutes of Health (USA) . . . . . [8315-34]

Extended Coffee Break . . . 3:00 to 3:50 pm

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Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

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

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

1:20 pm: **Quantitative evaluation of the memory bias effect in ROC studies with PET/CT**, Maria Kallergi, Technological Educational Insitute of Athens (Greece); Nicoletta Pianou, Alexandros Georgakopoulos, Biomedical Research Foundation of the Academy of Athens (Greece); Georgia Kafiri, Spiros Pavlou, Endocrine Clinics (Greece); Sofia Chatziioannou, Biomedical Research Foundation of the Academy of Athens (Greece). . . . . [8318-12]

1:40 pm: **A new parametrization for the three-class ideal observer's decision rule**, Darrin C. Edwards, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8318-13]

2:00 pm: **A nonparametric approach to comparing the areas under correlated LROC curves**, Adam Wunderlich, Frederic Noo, The Univ. of Utah (USA). . . . [8318-14]

2:20 pm: **Image recognition and consistency of response**, Tamara M. Haygood, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); John Ryan, The Univ. of Sydney (Australia); Qing M. A. Liu, Roland L. Bassett, Jr., The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . [8318-15]

2:40 pm: **Inverse dependence of search and classification performances in clinical lesion localization tasks in mammography**, Dev P. Chakraborty, Hong-Jun Yoon, Univ. of Pittsburgh (USA); Claudia R. Mello-Thoms, Univ. of Pittsburgh Cancer Institute (USA) [8318-16]

Extended Coffee Break . . . 3:00 to 3:50 pm

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Conference 8319 continued
Advanced PACS-based Imaging Informatics & Therapeutic Applications
Room: Golden West

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

PACS 30th Anniversary Session
Session Chair: **Heinz U. Lemke,** Computer Assisted Radiology and Surgery (Germany)

1:20 pm: **Thirty years of PACS: progress and perspective** *(Invited Paper)*, Steven C. Horii M.D., The Univ. of Pennsylvania Health System (USA) . . . . . [8319-01]

2:00 pm: **Reflections on 30 years of PACS** *(Invited Paper)*, Janice C. Honeyman-Buck, Univ. of Florida (USA) . . . . . [8319-02]

2:20 pm: **Thirty years of PACS evolution** *(Invited Paper)*, H. K. (Bernie) Huang, The Univ. of Southern California (USA) and Shanghai Institute of Technical Physics (China) and Hong Kong Polytechnic Univ. (Hong Kong, China) . . . . . [8319-03]

2:40 pm: **PACS: the next 30 years** *(Invited Paper)*, Eliot L. Siegel M.D., Univ. of Maryland Medical Ctr. (USA) . . . . [8319-04]

Extended Coffee Break . . . 3:00 to 3:50 pm

8319 continues on page 53

Conference 8313 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 15
Room: Town & Country. .Wed. 3:50 to 5:30 pm

Reconstruction II
Session Chairs: **Thomas G. Flohr,** Siemens Medical Solutions GmbH (Germany); **Jeffrey H. Siewerdsen,** The Johns Hopkins Univ. (USA)

3:50 pm: **Exact and efficient computation of noise covariance for fan-beam FBP reconstructions that use rebinning to parallel-beam geometry**, Adam Wunderlich, Frederic Noo, The Univ. of Utah (USA) . . . . . [8313-75]

4:10 pm: **Incorporation of noise and prior images in penalized-likelihood reconstruction of sparse data**, Yifu Ding, Jeffrey H. Siewerdsen, J. Webster Stayman, The Johns Hopkins Univ. (USA) . . . . . [8313-76]

4:30 pm: **A preliminary investigation of reduced-view image reconstruction from low-dose breast-CT data**, Junguo Bian, Xiao Han, The Univ. of Chicago (USA); Kai Yang, UC Davis Medical Ctr. (USA); Emil Y. Sidky, The Univ. of Chicago (USA); John M. Boone, UC Davis Medical Ctr. (USA); Xiaochuan Pan, The Univ. of Chicago (USA) . . . . . [8313-77]

4:50 pm: **Preliminary investigation of image reconstruction from sparse-view C-arm data**, Zheng Zhang, Junguo Bian, Xiao Han, The Univ. of Chicago Medical Ctr. (USA); Joseph J. Manak, Jr., GE Global Research (France); Emil Y. Sidky, Xiaochuan Pan, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8313-78]

5:10 pm: **Reduced memory augmented Lagrangian algorithm for 3D iterative x-ray CT image reconstruction,** Madison G. McGaffin, Sathish Ramani, Jeffrey A. Fessler, Univ. of Michigan (USA) . [8313-79]

Conf 8313 ENDS

Conference 8314 continued
Image Processing
Room: San Diego

SESSION 11
Room: San Diego . . . . . .Wed. 3:50 to 5:30 pm

Segmentation of Vessels and Tubular Structures
Session Chair: **Cristian Lorenz,** Philips Research (Germany)

3:50 pm: **Automated reconstruction of neural trees using front re-initialization**, Amit Mukherjee, Armen Stepanyants, Northeastern Univ. (USA) . . . . . [8314-53]

4:10 pm: **Segmentation of anatomical branching structures based on texture features and conditional random field**, Tatyana Nuzhnaya, Temple Univ. (USA); Predrag R. Bakic, Despina Kontos, The Univ. of Pennsylvania Health System (USA); Vasileios Megalooikonomou, Haibin Ling, Temple Univ. (USA) . . . . . [8314-54]

4:30 pm: **Liver vessel tree segmentation based on a hybrid graph cut: fuzzy connectedness method**, Xinjian Chen, National Institutes of Health (USA); Milan Sonka, The Univ. of Iowa (USA) . . [8314-55]

4:50 pm: **Contrast independent detection of branching points in network-like structures**, Boguslaw Obara, Mark Fricker, Vicente Grau, Univ. of Oxford (UK) . . . . . [8314-56]

5:10 pm: **Robust RANSAC-based blood vessel segmentation**, Ahmed Yureidini, INRIA Lille - Nord Europe (France); Erwan Kerrien, LORIA (France); Stéphane Cotin, INRIA Lille - Nord Europe (France) . . . . . [8314-57]

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 8
Room: Royal Palms. . . . .Wed. 3:50 to 5:30 pm

Musculoskeletal
Session Chairs: **Ronald M. Summers,** National Institutes of Health (USA); **Hayit Greenspan,** Tel Aviv Univ. (Israel)

3:50 pm: **Automatic measurement of vertebral body deformations in CT images based on a 3D parametric model**, Darko Štern, Miran Bürmen, Boštjan Likar, Franjo Pernuš, Tomaž Vrtovec, Univ. of Ljubljana (Slovenia) . . . . . [8315-35]

4:10 pm: **Pixel level image fusion for medical imaging: an energy minimizing approach**, Brandon Miles, The Univ. of Western Ontario (Canada); Max W. K. Law, Ismail Ben-Ayed, GE Healthcare (Canada); Gregory Garvin, St. Joseph's Hospital (Canada); Aaron Fenster, Robarts Research Institute (Canada); Shuo Li, GE Healthcare (Canada) . . . . . [8315-36]

4:30 pm: **Detection of sclerotic bone metastases in the spine using watershed algorithm and graph cut**, Tatjana Wiese, Jianhua Yao, Joseph Burns, Ronald M. Summers M.D., National Institutes of Health (USA) . . . . . [8315-37]

4:50 pm: **Multi-stage osteolytic spinal bone lesion detection from CT data with internal sensitivity control**, Michael G. Wels, Alexey Tsymbal, Michael Kelm, Michael Sühling, Siemens AG (Germany); Dorin Comaniciu, Siemens Corporate Research (USA); Matthias Hammon, Alexander Cavallaro, Universitätsklinikum Erlangen (Germany); Grzegorz P. Soza, Siemens AG (Germany) . . . . . [8315-38]

5:10 pm: **Scoliosis curve type classification from 3D trunk image using kernel machine**, Mathias M. Adankon, Jean Dansereau, Ecole Polytechnique de Montréal (Canada); Stefan Parent M.D., Hubert Labelle M.D., CHU Sainte-Justine (Canada); Farida Cheriet, Ecole Polytechnique de Montréal (Canada) . . . . . [8315-39]

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Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

SESSION 4
Room: California . . . . . .Wed. 3:50 to 5:30 pm

Image Perception
Session Chair: **David J. Manning,** Lancaster Univ. (UK)

3:50 pm: **Outlining and categorising mammographic breast density: expert radiologist perception**, Yanpeng Li, Patrick C. Brennan, The Univ. of Sydney (Australia); Warwick Lee, Cancer Institute NSW (Australia); John Ryan, The Univ. of Sydney (Australia); Jennifer Cawson, Carolyn Nickson, The Univ. of Melbourne (Australia); Warren Reed, Mariusz W. Pietrzyk, Dana Al Mousa, Elaine Ryan, The Univ. of Sydney (Australia) . . . . . [8318-17]

4:10 pm: **Measurements of the detectability of hepatic hypovascular metastases as a function of eccentricity in CT images**, Ivan Diaz, Ctr. Hospitalier Univ. Vaudois (Switzerland); Miguel Eckstein, Univ. of California, Santa Barbara (USA); Anaïs Luyet, Pierre Bize, François Bochud, Ctr. Hospitalier Univ. Vaudois (Switzerland) . . . . . [8318-18]

4:30 pm: **Signal-known exactly detection performance in tomosynthesis: Does volume visualization help human observers?**, Ingrid S. Reiser, Robert M. Nishikawa, The Univ. of Chicago (USA) . . . . . [8318-19]

4:50 pm: **Satisfaction of search errors detecting subtle fractures diminish in the presence of more serious injuries**, Kevin S. Berbaum, Kevin M. Schartz, Robert T. Caldwell, George Y. El-Khoury, Kenjirou Ohashi, Mark Madsen, Edmund A. Franken, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [8318-20]

5:10 pm: **Predictive modeling of human perception subjectivity: feasibility study of mammographic lesion similarity**, Georgia D. Tourassi, Songhua Xu, Oak Ridge National Lab. (USA) . . . . . [8318-21]

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Conference 8319 continued
Advanced PACS-based Imaging Informatics & Therapeutic Applications
Room: Golden West

SESSION 2
Room: Golden West . . . .Wed. 3:50 to 5:30 pm

Cloud and Mobile Computing
Session Chair: **Jianguo Zhang,** Shanghai Institute of Technical Physics (China)

3:50 pm: **Secured image processing in Grid/Cloud computing**, Andreas Thiel, OFFIS e.V. (Germany); Frank Hertel, Johannes Bernarding, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . [8319-05]

4:10 pm: **CEDIMS: cloud ethical DICOM image Mojette storage**, Pierre Tervé, KEOSYS (France); Jeanpierre V. Guédon, Pierre Evenou, Univ. de Nantes (France); Jerome Fortineau, KEOSYS (France) . . . . . [8319-06]

4:30 pm: **A cloud-based medical image repository**, Anthony J. Maeder, Birgit M. Planitz, Diaa El Rifai, Univ. of Western Sydney (Australia) . . . . . [8319-07]

4:50 pm: **Performance evaluation of a visual display calibration algorithm for iPad**, Lode De Paepe, Peter De Bock, Tom Kimpe, Barco N.V. (Belgium) . . . . [8319-08]

5:10 pm: **A comprehensive framework for quality assurance in clinical trials**, Omar El Gazzar, Michael Onken, Marco Eichelberg, Andreas Hein, OFFIS e.V. (Germany) . . . . . [8319-09]

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Conference 8314 continued
Image Processing
Room: California

SESSION 12
Room: California . . . . . Thurs. 8:00 to 9:40 am

Conference 8315 continued
Computer-Aided Diagnosis
Room: California

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

Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

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

Conference 8319 continued
Advanced PACS-based Imaging Informatics & Therapeutic Applications
Room: Golden West

SESSION 3
Room: Golden West . . . . . Thurs. 8:00 to 9:40 am

JOINT SESSION WITH— 8314: Image Processing, 8315: Computer-Aided Diagnosis, and 8318: Image Perception, Observer Performance, and Technology Assessment

Digital Pathology I
Session Chairs: **Metin N. Gurcan,** The Ohio State Univ. Medical Ctr. (USA); **Anant Madabhushi,** Rutgers, The State Univ. of New Jersey (USA)

8:00 am: **Pathology: why the future of medicine's gold standard is to go digital** *(Keynote Presentation)*, Michael J. Becich M.D., Univ. of Pittsburgh (USA) . . . . . [8318-22]

9:00 am: **Automated malignancy detection in breast histopathological images**, Andrei Chekkoury, Parmeshwar K. Khurd, Jie Ni, Claus Bahlmann, Ali Kamen, Amar H. Patel, Leo Grady, Siemens Corporate Research (USA); Elizabeth A. Krupinski, The Univ. of Arizona (USA); Jeffrey P. Johnson, Siemens Corporate Research (USA); Anna R. Graham M.D., Ronald S. Weinstein M.D., The Univ. of Arizona (USA) . . .[8315-40]

9:20 am: **Robust alignment of prostate histology slices with quantified accuracy**, Cecilia Hughes, INSERM, U1032 (France) and CREATIS, CNRS UMR 5220, INSERM U1044, (France) and Univ. Lyon 1 (France); Olivier Rouviere, Hospices Civils de Lyon (France) and Inserm, U1032 (France); Florence Mege Lechevallier, Hospices Civils de Lyon (France); Rémi Souchon, INSERM, U1032 (France); Rémy Prost, CREATIS-LRMN INSA (France). . . . . .[8314-58]

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

Data Mining I
Session Chair: **Janice C. Honeyman-Buck,** Univ. of Florida (USA)

8:00 am: **Efficient similarity search on 3D bounding box annotations**, Hans-Peter Kriegel, Marisa Petri, Matthias Schubert, Michael Shekelyan, Michael Stockerl, Ludwig-Maximilians-Univ. München (Germany) . . . . . [8319-10]

8:20 am: **Implementation and application of an interactive, user-friendly validation software for RADIANCE**, Anand Sundaram, Univ. of Pennsylvania (USA); William Boonn, Woojin Kim, Tessa S. Cook, The Univ. of Pennsylvania Health System (USA) . . [8319-11]

8:40 am: **Linking DICOM pixel data with radiology reports with automatic semantic annotation**, Sayan D. Pathak, Microsoft Corp. (USA); Woojin Kim, The Univ. of Pennsylvania Health System (USA); Indeera Munasinghe, Antonio Criminisi, Microsoft Research Cambridge (UK); Steve White, Khan M. Siddiqui M.D., Microsoft Corp. (USA) . . . . . [8319-12]

9:00 am: **Medical image retrieval system using multiple features from 3D ROIs**, Hongbing Lu, Weiwei Wang, Qimei Liao, Guopeng Zhang, Zhiming Zhou, Fourth Military Medical Univ. (China) . . . . . [8319-13]

9:20 am: **Multi-scale visual words for hierarchical medical image categorization,** Dimitrios Markonis, Alba Garcia Seco de Herrera, Ivan Eggel, Henning Müller, HES-SO Valais (Switzerland) . . . . . [8319-14]

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

The Computer-Aided Diagnosis conference poster award recipients will be recognized and certificates distributed.

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

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

The Image Perception, Observer Performance, and Technology Assessment conference poster award recipients will be recognized and certificates distributed.

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

Poster Award Announcements
Room: Golden West . . . . . Thurs. 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.

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

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Conference 8314 continued
Image Processing
Room: California

SESSION 13
Room: California . . . Thurs. 10:10 am to 12:10 pm

Conference 8315 continued
Computer-Aided Diagnosis
Room: California

SESSION 10
Room: California . . . Thurs. 10:10 am to 12:10 pm

Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

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

Conference 8319 continued
Advanced PACS-based Imaging Informatics & Therapeutic Applications
Room: Golden West

SESSION 4
Room: Golden West Thurs. 10:10 am to 12:10 pm

JOINT SESSION WITH— 8314: Image Processing, 8315: Computer-Aided Diagnosis, and 8318: Image Perception, Observer Performance, and Technology Assessment

Digital Pathology II

Session Chairs: **Metin N. Gurcan,** The Ohio State Univ. Medical Ctr. (USA); **Anant Madabhushi,** Rutgers, The State Univ. of New Jersey (USA)

10:10 am: **Follicular lymphoma grading using cell-graphs and multiscale feature analysis**, Basak Oztan, Rensselaer Polytechnic Institute (USA); Hui Kong, Metin Gurcan, The Ohio State Univ. Medical Ctr. (USA); Bulent Yener, Rensselaer Polytechnic Institute (USA) [8315-41]

10:30 am: **Analysis of slide exploration strategy of cytologists when reading virtual slides**, Liron Pantanowitz M.D., Anil V. Parwani M.D., Eugene Tseytlin, Claudia R. Mello-Thoms, Univ. of Pittsburgh Cancer Institute (USA) . . . . . [8318-23]

10:50 am: **Reconstruction of incomplete cell paths through a 3D-2D level set segmentation**, Maia Hariri, Justin W. L. Wan, Univ. of Waterloo (Canada) [8314-59]

11:10 am: **Nucleus fingerprinting for the unique identification of Feulgen-stained nuclei**, David Friedrich, RWTH Achen (Germany); Matthias Brozio, André A. Bell, RWTH Aachen (Germany); Stefan F. Biesterfeld M.D., Alfred Böcking, Heinrich-Heine-Univ. Düsseldorf (Germany); Til Aach, RWTH Aachen (Germany) . . . . . [8315-42]

11:30 am: **Influence of LCD color reproduction accuracy on observer performance using virtual pathology slides**, Elizabeth A. Krupinski, The Univ. of Arizona (USA); Louis D. Silverstein, Vcd Sciences Inc. (USA); Syed F. Hashmi, Anna R. Graham, Ronald S. Weinstein, Hans Roehrig, The Univ. of Arizona (USA) . . . . . [8318-24]

11:50 am: **Compressing virtual pathology slides: human and model observer evaluation**, Elizabeth A. Krupinski, The Univ. of Arizona (USA); Jeffrey P. Johnson, Siemens Corporate Research (USA); Stacey Jaw, Anna R. Graham, Ronald S. Weinstein, The Univ. of Arizona (USA) . . . . . [8318-25]

PACS/Systems Integration

Session Chair: **Khan M. Siddiqui,** Microsoft Corp. (USA)

10:10 am: **Lesion comparison of multiple sclerosis in Hispanic and Caucasian patients utilizing an imaging informatics-based eFolder system**, Kevin C. Ma, Lilyana Amezcua, Brent J. Liu, The Univ. of Southern California (USA) . . . . . [8319-15]

10:30 am: **Automating PACS quality control with the Vanderbilt image processing enterprise resource**, Michael L. Esparza, Brian Welch, Bennett A. Landman, Vanderbilt Univ. (USA) . . . . . [8319-16]

10:50 am: **Design of e-science platform for biomedical imaging research cross multiple academic institutions and hospitals**, Jianguo Zhang, Kai Zhang, Yuanyuan Yang, Tusheng Wang, Shanghai Institute of Technical Physics (China) . . . . . [8319-17]

11:10 am: **Managing and querying whole slide images**, Fusheng Wang, Emory Univ. (USA); Tae W. Oh, Georgia State Univ. (USA); Cristobal Vergara-Niedermayr, Tahsin M. Kurc, Joel H. Saltz, Emory Univ. (USA) . . . . . [8319-18]

11:30 am: **Synchronized slice viewing of similar image series**, Sharib Ali, Antonio Foncubierta-Rodríguez, Adrien Depeursinge, HES-SO Valais (Switzerland); Fabrice Meriaudeau, Univ. de Bourgogne (France); Osman Ratib, Univ. Hospital of Geneva (Switzerland); Henning Müller, HES-SO Valais (Switzerland) . . . . . [8319-19]

11:50 am: **The impact of skull bone intensity on the quality of compressed CT neuro images**, Ilona A. Kowalik-Urbaniak, Edward R. Vrscay, Zhou Wang, Univ. of Waterloo (Canada); Christine Cavaro-Menard, Ctr. Hospitalier Univ. de Angers (France); David Koff, McMaster Univ. (Canada); Bill Wallace, Agfa Healthcare (Canada); Boguslaw Obara, Univ. of Oxford (UK) . . . . . [8319-20]

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

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Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 11
Room: Royal Palms. . . . . Thurs. 1:20 to 3:00 pm

Novel Applications

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

1:20 pm: **Computer aided periapical lesion diagnosis using quantized texture analysis**, Yi Wu, Erkang Cheng, Fangfang Xie, Jie Yang, Vasileios Megalooikonomou, Haibin Ling, Temple Univ. (USA) . . . . . [8315-43]

1:40 pm: **Automated quantification of adipose and skeletal muscle tissue in whole-body MRI data for epidemiological studies**, Diana Wald, Birgit Teucher, Julien Dinkel, Rudolf Kaaks, Stefan Delorme, Hans-Peter Meinzer, Tobias Heimann, Deutsches Krebsforschungszentrum (Germany). . . . . [8315-44]

2:00 pm: **Semantic and topological classification of images in magnetically guided capsule endoscopy**, Philip W. Mewes, Siemens Medical Solutions GmbH (Germany) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Peter Rennert, Aleksandar L. Juloski, Siemens Medical Solutions GmbH (Germany); Alain Lalande, Univ. de Bourgogne (France); Elli Angelopoulou, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Rainer Kuth, Siemens Medical Solutions GmbH (Germany); Joachim Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8315-45]

2:20 pm: **Fast vessel segmentation in retinal images using multiscale enhancement and second-order local entropy**, Honggang Yu, E. Simon Barriga, VisionQuest Biomedical, LLC (USA); Carla P. Agurto Rios, The Univ. of New Mexico (USA); Gilberto Zamora, VisionQuest Biomedical, LLC (USA); Wendall Bauman, Retina Institute of South Texas (USA); Peter Soliz, VisionQuest Biomedical, LLC (USA) . . . . . [8315-46]

2:40 pm: **Automated artery-venous classification of retinal blood vessels based on structural mapping method**, Vinayak S. Joshi, Mona K. Garvin, Joseph M. Reinhardt, The Univ. of Iowa (USA); Michael D. Abramoff M.D., The Univ. of Iowa Hospitals and Clinics (USA) . . . . . [8315-47]

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

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Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

SESSION 7
Room: California . . . . . Thurs. 1:20 to 3:00 pm

Model Observers

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

1:20 pm: **Creation of an ensemble of simulated cardiac cases and a human observer study: tools for the development of a numerical observer for SPECT myocardial perfusion imaging**, J. Michael O'Connor, P. Hendrik Pretorius, Robert Licho M.D., Samuel Joffe M.D., Shannon Mehurg M.D., Howard C. Gifford, Univ. of Massachusetts Medical School (USA); Jovan G. Brankov, Illinois Institute of Technology (USA) [8318-26]

1:40 pm: **Volumetric detection tasks with varying complexity: model and human observer performance**, Ljiljana Plati?a, Asli E. Kumcu, Univ. Gent (Belgium); Milan Plati?a, TASS (Belgium); Ewout Vansteenkiste, Univ. Gent (Belgium); Karel Deblaere, Ghent Univ. Hospital (Belgium); Aldo Badano, U.S. Food and Drug Administration (USA); Wilfried Philips, Univ. Gent (Belgium). . . . . [8318-27]

2:00 pm: **Performance characteristics of a visual-search human-model observer with sparse PET image data**, Howard C. Gifford, Univ. of Massachusetts Medical School (USA) . . . . . [8318-28]

2:20 pm: **Theoretical performance analysis of multi-slice channelized Hotelling observers**, Bart Goossens, Ljiljana Plati?a, Wilfried Philips, Univ. Gent (Belgium) . . . . . [8318-29]

2:40 pm: **Utilizing the Hotelling template as a tool for CT image reconstruction algorithm design**, Emil Y. Sidky, Adrian Sanchez, Xiaochuan Pan, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8318-30]

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

8318 continues on page 57

Conference 8319 continued
Advanced PACS-based Imaging Informatics & Therapeutic Applications
Room: Golden West

SESSION 5
Room: Golden West . . . . . Thurs. 1:20 to 3:00 pm

Data Mining II

Session Chair: **Maria Y. Law,** The Hong Kong Polytechnic Univ. (Hong Kong, China)

1:20 pm: **Searching biomedical images through content-based learning from examples**, Hao Jiang, The Univ. of Hong Kong (Hong Kong, China); Songhua Xu, Oak Ridge National Lab. (USA); Francis C. M. Lau, The Univ. of Hong Kong (Hong Kong, China) . [8319-21]

1:40 pm: **Comparative analysis of semantic localization accuracies between adult and pediatric DICOM CT images**, Sayan D. Pathak, Microsoft Corp. (USA); Antonio Criminisi, Duncan Robertson, Microsoft Research Cambridge (UK); Steve White, Microsoft Corp. (USA); David R. Haynor, Univ. of Washington (USA); Khan M. Siddiqui M.D., Microsoft Corp. (USA) [8319-22]

2:00 pm: **Computer-assisted radiation treatment planning system for determination of beam directions based on similar cases in a database for stereotactic body radiotherapy**, Taiki Magome, Hidetaka Arimura, Yoshiyuki Shioyama, Chiaki Tokunaga, Katsumasa Nakamura, Hiroshi Honda, Masafumi Ohki, Fukai Toyofuku, Hideki Hirata, Kyushu Univ. (Japan) . . . . . [8319-23]

2:20 pm: **Creating a classification of image types in the medical literature for visual categorization**, Henning Müller, HES-SO Valais (Switzerland); Jayashree Kalpathy-Cramer, Oregon Health & Science Univ. (USA); Dina Demner-Fushman, Sameer K. Antani, National Library of Medicine (USA) . . . . . [8319-24]

2:40 pm: **Data mining DICOM RT objects for quality control in radiation oncology**, Ruchi R. Deshpande, The Univ. of Southern California (USA); John J. DeMarco, Daniel A. Low, Univ. of California, Los Angeles (USA); Anh H. Le, Univ. of Florida (USA); Brent J. Liu, The Univ. of Southern California (USA). [8319-25]

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

8319 continues on page 57

Conference 8315 continued
Computer-Aided Diagnosis
Room: Royal Palms I-III

SESSION 12
Room: Royal Palms. . . . . Thurs. 3:30 to 5:30 pm

Cardiac and Neuro
Session Chairs: **Horst Karl Hahn,** Fraunhofer MEVIS (Germany); **Marleen de Bruijne,** Erasmus MC (Netherlands)

3:30 pm: **Automatic classification of scar tissue in late gadolinium enhancement cardiac MRI for the assessment of left-atrial wall injury after radiofrequency ablation**, Daniel J. Perry, Alan H. Morris, Nathan S. Burgon, Christopher J. McGann M.D., Robert S. MacLeod, Joshua Cates, The Univ. of Utah (USA) . . . . . .[8315-48]

3:50 pm: **Automatic computation of cardiac measurements from B-mode echocardiography**, Jin-Hyeong Park, Shaolei Feng, Shaohua Zhou, Siemens Corporate Research (USA) . . . . . .[8315-49]

4:10 pm: **Coronary artery remodeling in non-contrast CT images for cardiac risk assessment**, Haiyong Xu, Mingna Zheng, Yanhua Yang, John J. Carr, Yaorong Ge, Wake Forest Univ. School of Medicine (USA) . .[8315-50]

4:30 pm: **Cluster-based differential features to improve detection accuracy of focal cortical dysplasia**, Chin-Ann Yang, Mostafa Kaveh, Univ. of Minnesota, Twin Cities (USA); Bradley Erickson M.D., Mayo Clinic (USA) . . . . . .[8315-51]

4:50 pm: **Template-based tractography for clinical neonatal diffusion imaging data**, Fernando Yepes, Children's Hospital Los Angeles (USA) and Instituto de Investigaciones Biomedicas de Barcelona (Spain); Natasha Lepore, Yi Lao, Children's Hospital Los Angeles (USA); Ashok Panigrah, Children's Hospital of Pittsburgh (USA) and Children's Hospital Los Angeles (USA); Rafael Ceschin, Children's Hospital of Pittsburgh (USA); Subhashree Ravichandran, Marvin D. Nelson, Jr., Children's Hospital Los Angeles (USA); Pierre Fillard, Institut National de Recherche en Informatique et en Automatique (France) . . . . . .[8315-52]

5:10 pm: **Detection of cerebral aneurysms in MRA, CTA and 3D-RA data sets**, Clemens M. Hentschke, Otto-von-Guericke-Univ. Magdeburg (Germany); Oliver Beuing, Rosa Nickl, Univ. Hospital Magdeburg (Germany); Klaus D. Tönnies, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . .[8315-53]

Conf 8315 ENDS

Conference 8318 continued
Image Perception, Observer Performance, and Technology Assessment
Room: California

SESSION 8
Room: California . . . . . Thurs. 3:30 to 5:30 pm

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

3:30 pm: **Diagnostic accuracy of digital mammography versus tomosynthesis: effect of radiologists' experience**, Federica Zanca, UZ Leuven (Belgium); Matthew G. Wallis, Addenbrooke's Hospital (UK); Elin Moa, Sectra Mamea AB (Sweden); Karin Leifland, Capio St. Göran's Hospital (Sweden); Mats E. Danielsson, Sectra Mamea AB (Sweden); Raymond Oyen, Hilde Bosmans, UZ Leuven (Belgium) . .[8318-31]

3:50 pm: **Is diagnostic accuracy for detectng pulmonary nodules in chest CT reduced after a long day of reading?**, Elizabeth A. Krupinski, The Univ. of Arizona (USA); Kevin S. Berbaum, Robert T. Caldwell, Kevin M. Schartz, The Univ. of Iowa Hospitals and Clinics (USA) . . . . . .[8318-32]

4:10 pm: **Indirect detection of pulmonary nodules on low-pass filtered and original x-ray images during limited and unlimited display times**, Mariusz W. Pietrzyk, Mark F. McEntee, The Univ. of Sydney (Australia); Micheal G. Evanoff, The American Board of Radiology (USA); Patrick C. Brennan, The Univ. of Sydney (Australia) . . . . . .[8318-33]

4:30 pm: **Are improved rater reliability results associated with faster reaction times after rater training for judgments of laryngeal mucus?**, Heather Bonilha, Amy Dawson, Katlyn McGrattan, Medical Univ. of South Carolina (USA) . . . . . .[8318-34]

4:50 pm: **Assessment of change in breast density: reader performance using synthetic mammographic images**, Susan Astley, Chitra Swayamprakasam, Michael Berks, Jamie Sergeant, The Univ. of Manchester (UK); Julie Morris, Mary Wilson, Nicky Barr, Caroline Boggis, Univ. Hospital of South Manchester (UK) . . . . . .[8318-35]

5:10 pm: **Performance differences across the Atlantic when UK and USA radiologists read the same set of test screening cases**, Yan Chen, Alastair G. Gale, Loughborough Univ. (UK); Micheal G. Evanoff, The American Board of Radiology (USA); Usman Zakir, Loughborough Univ. (UK) . . . . . .[8318-36]

Conf 8318 ENDS

Conference 8319 continued
Advanced PACS-based Imaging Informatics & Therapeutic Applications
Room: Golden West

SESSION 6
Room: Golden West . . . . . Thurs. 3:30 to 5:30 pm

Therapy
Session Chair: **John B. Strauss,** Microsoft Corp. (USA)

3:30 pm: **Web-based cocumentation system with exchange of DICOM RT for multicenter clinical studies in particle therapy**, Kerstin A. Kessel, Universitätsklinikum Heidelberg (Germany); Nina Bougatf, Universitätsklinikum Heidelberg (Germany) and Hochschule Heilbronn (Germany); Christian Bohn, Uwe Engelmann, CHILI GmbH (Germany); Dieter Oetzel, Universitätsklinikum Heidelberg (Germany); Rolf Bendl, Hochschule Heilbronn (Germany); Jürgen Debus, Stephanie E. Combs, Universitätsklinikum Heidelberg (Germany) . . . . . .[8319-26]

3:50 pm: **Utilization of DICOM multiframe objects for integrating kinetic and kinematic data with raw videos in movement analysis of wheel-chair users to minimize shoulder pain**, Ruchi R. Deshpande, The Univ. of Southern California (USA); Philip Requejo, Rancho Los Amigos National Rehabilitation Ctr. (USA); Sarah McNitt-Gray, The Univ. of Southern California (USA); Puja Ruparel, Rancho Los Amigos National Rehabilitation Ctr. (USA); Brent J. Liu, The Univ. of Southern California (USA) . . . . . .[8319-27]

4:10 pm: **The peer review system (PRS) for quality assurance and treatment improvement in radiation therapy**, Anh H. Le, Rishabh Kapoor, Jatinder Palta, Univ. of Florida (USA) . . . . . .[8319-28]

4:30 pm: **A multimedia comprehensive imaging informatics system with decision support tools for a multisite collaboration research of stroke rehabilitation**, Ximing Wang, Kathleen A. Garrison, Carolee J. Winstein, Jorge R. Documet, Brent J. Liu, The Univ. of Southern California (USA) . . . . . .[8319-29]

4:50 pm: **An imaging informatics-based ePR (electronic patient record) system for providing decision support in evaluating dose optimization in stroke rehabilitation**, Brent J. Liu, Carolee J. Winstein, Ximing Wang, Matt Konersman, Clarisa Martinez, Nicolas Schweighofer, The Univ. of Southern California (USA) . . . . . .[8319-30]

5:10 pm: **A web-based electronic patient record (ePR) system for data integration in movement analysis research on wheel-chair users to minimize shoulder pain**, Ruchi R. Deshpande, The Univ. of Southern California (USA); Philip Requejo, Rancho Los Amigos National Rehabilitation Ctr. (USA); Erry Sutisna, Ximing Wang, Sarah McNitt-Gray, Margaret Liu, The Univ. of Southern California (USA); Puja Ruparel, Rancho Los Amigos National Rehabilitation Ctr. (USA); Brent J. Liu, The Univ. of Southern California (USA) . . . . . .[8319-31]

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Registration

Onsite Registration and Information Hours

Atlas Foyer

Saturday 4 February	7:30 am to 4:00 pm
Sunday 5 February	7:15 am to 4:00 pm
Monday 6 February	7:30 am to 4:00 pm
Tuesday 7 February	7:30 am to 4:00 pm
Wednesday 8 February	7:30 am to 4:00 pm
Thursday 9 February	7:30 am to 1:30 pm

Course Materials Desk

Located at the SPIE Registration Desk, Atlas Foyer
Open during Registration hours

- If you have registered to attend a course, please stop by the Course Materials Desk AFTER you pick up your badge.
- You must obtain your course notes to find out class location

SPIE Receipts, Badge Corrections, Cashier

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SPIE cashier can assist with registration payments, receipts and badge corrections.

- **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 please see the onsite cashier at the Cashier station in the registration area.
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SPIE Onsite Services

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Internet Access

Grand Exhibit Hall Foyer

Sunday	Noon to 9:00 pm
Monday through Wednesday	7:00 am to 9:00 pm
Thursday	7:00 am to 1:30 pm

There will be multiple workstations allowing attendees to access their Internet e-mail during the conference and several Ethernet connections to use with your personal laptop. There will be a 10-minute time limit per each person's Internet session.

WiFi

Complimentary WiFi access for attendees with 801.11b wireless enabled laptops and PDAs will be available Saturday through Thursday in the Grand Exhibit Hall.

For attendees staying at the Town and Country Resort, in-room wireless internet is complimentary.

NOTE: WiFi service is not available in the meeting rooms.

Author/Presenter Information

Speaker Check-in Desk / Preview Station

Terrace Salon I

Saturday through Thursday. . . . . .7:30 am to 5 pm

All conference rooms will have a computer workstation, LCD projector, screen, lapel microphone, and laser pointer.

All presenters are requested to come to the Speakers Check-in Room to confirm display settings of their presentations from their memory devices or laptops with the audiovisual equipment being used at this symposium.

Poster Setup Instructions

Grand Exhibit Hall

Sunday/Monday Poster Session

Author Setup Start Time . . . . . Sunday 9:40 am

Tuesday/Wednesday Poster Session

Author Setup Start Time . . . . . Tuesday 9:40 am

Poster presenters must set up their posters during the designated time of their poster session assigned presentation.

- Paper numbers will be posted on the poster boards in numerical order; please find your paper number and post your poster in the designated space.
- A poster author or coauthor is required to stand by the poster during the scheduled interactive poster session and reception to answer questions from attendees.
- Presenters who have not placed their papers on their assigned board one-half hour before the start of the interactive poster session and reception will be considered a "no show" and their manuscript will not be published.
- Presenters must remove their posters at the end of extended viewing.
- Posters not removed will be considered unwanted and will be discarded.
- SPIE assumes no responsibility for posters left up after the end of each poster session.

Business Services

Business/Copy Center

Atlas Foyer

MSI is the in-house business center for the Town & Country Hotel. 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.

Messages

SPIE has an urgent message line available during registration hours Saturday through Thursday by calling **619 752 7733**.

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Concierge Desk

Atlas Foyer

A Concierge Desk will be open from 8:30 to 10:00 am and from 3:00 to 4:00 pm Sunday through Wednesday for sightseeing, shopping and restaurant information.

Car Rental

Hertz

Hertz Car Rental has been selected as the official car rental agency for this Symposium. To reserve a car, identify yourself as a Medical Imaging Conference attendee using the Hertz Meeting Code **CV# 029B0017**. In the United States call 1-800-654-2240.

Driving Directions

Town & Country Resort and Convention Center is located at 500 Hotel Circle North in the Mission Valley area of San Diego, California at Hotel Circle North and Fashion Valley Road. To reach the hotel from north or south, take I-5 to I-8 east. Follow I-8 east to the "Hotel Circle" exit. From I-805, take I-8 west to the Hotel Circle exit and proceed to Hotel Circle North.

Parking During Medical Imaging

Parking at the Town and Country Resort & Convention Center for overnight guests is free. Non-guests pay $8 per day.

Food and Beverage Services

Coffee Breaks

Complimentary coffee will be served twice each day of the conference in the following locations:

Saturday 4 February . . . . . .9:30 am and 3:40 pm
Rose Garden Fountain

Sunday 5 February . . . . . .9:40 am and 3:00 pm
Grand Exhibit Hall

Monday 6 February . . . . . .9:40 am and 3:20 pm
Grand Exhibit Hall

Tuesday 7 February. . . . . .9:40 am and 3:00 pm
Grand Exhibit Hall

Wednesday 8 February . . . . . 9:40 am and 3:00 pm*
Grand Exhibit Hall

Thursday 9 February . . . . . .9:40 am and 3:00 pm
Atlas Foyer

*Join us Wednesday at the afternoon coffee break for a celebration honoring the 40-year Anniversary of Medical Imaging.

SPIE Hosted Lunches

SPIE hosted lunches will be served Sunday through Thursday from 12:10 pm to 1pm poolside at the Terrace Pavilion. Should inclement weather prevent outdoor lunches, they will be served in the Grand Exhibit Hall.

Complimentary tickets for lunches will be included in registration packets for full-conference registrants. Student attendees will receive a complimentary lunch ticket for Monday, Tuesday and Wednesday.

Students may purchase additional lunch tickets from the cashier at the SPIE Registration Desk if tickets are available. The Registration staff will be notified of available seating starting 10 minutes after the last conference room breaks, usually between 12:20-12:30pm. All attendees need to make their own lunch arrangements on Saturday.

Policies

Audio/Video/Digital Recording Policy

In the Meeting Rooms and Poster Sessions: For copyright reasons, recordings of any kind are strictly prohibited without prior written consent of the presenter in any conference session, course or of posters presented. Each presenter being taped must file a signed written consent form. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their film or recording media. Consent forms are available at the Speaker Check-In Desk.

Laser Pointer Safety Information

SPIE supplies tested and safety approved laser pointers for all conference meeting rooms, and for short course rooms if instructors request one. For safety reasons, SPIE requests that presenters use our provided laser pointers available in each meeting room.

If using your own laser pointer, have it tested at your facility to make sure it has <5 mW power output. Laser pointers in Class II and IIIa (<5 mW) are eye safe if power output is correct - but don't automatically trust the labeling. Commercially available laser pointers, red or green (or any color), could be incorrectly labeled as to their wavelength and power output.

Presenters intending to use their own laser pointer for presentations are required to come to the Speaker Check-In Desk onsite and test their pointer on our power meter. If the pointer fails the safe power level you may not use the pointer at the conference. You will be required to sign a waiver releasing SPIE of any liability for use of potentially non-safe laser pointers.

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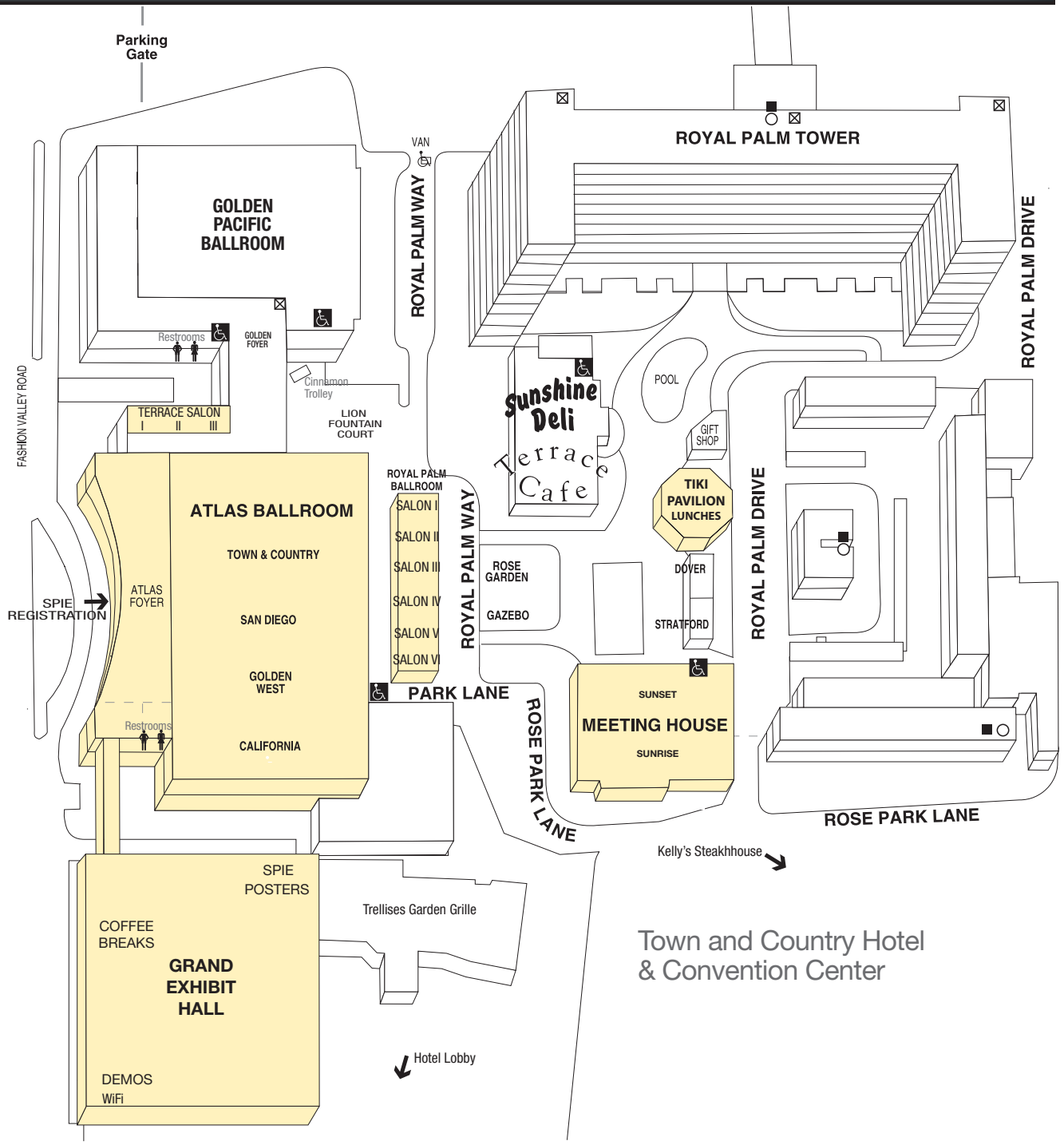
Personal belongings such as briefcases, backpacks, coats, book bags, etc., should not be left unattended in meeting rooms or public areas. These items will be subject to removal by security upon discovery.



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