SPIE Medical Imaging

Conferences: 17–21 February 2008
Courses: 16–19 February 2008
Exhibition: 18–20 February 2008

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

Technical Program

NETWORK WITH PEERS — HEAR THE LATEST RESEARCH

- **Physics of Medical Imaging**
- **Image Processing**
- **Computer-Aided Diagnosis**
- **Physiology, Function, and Structure from Medical Images**
- **Image Perception, Observer Performance, and Technology Assessment**
- **Visualization, Image-guided Procedures, and Modeling**
- **PACS and Imaging Informatics**
- **Ultrasonic Imaging and Signal Processing**

SPIE
Connecting minds. Advancing light.

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Cover Photos: (Left photo) Courtesy of Georgia Tech, Gary Meek. A team of Georgia Tech researchers, including research engineer Francois Guillot in the School of Mechanical Engineering, is developing an inexpensive, handheld device that uses Doppler ultrasound technology to find veins quickly. (Middle photo) Photo by Scott Bauer. At Howard University in Washington, D.C., chemist George Gassner records information as animal scientist Al Mitchell (left) and university scientist Hua Fu Song examine a cross-sectional magnetic resonance image from the abdominal area of a pig. The sharp images of the MRIs let scientists see how a particular swine breeding line looks—in terms of fat-to-lean ratio, or how a particular diet is affecting an animal's body. In the background, animal geneticist Armin Scholz monitors the pig within the MRI chamber.

Welcome!

Welcome to Medical Imaging 2008, the premier annual meeting on the scientific and technical aspects of medical imaging. This year's meeting features technical presentations on the most up-to-date research and development in the areas of image visualization, and image-guided procedures; physics of medical imaging; physiology, function, and structure from medical images; image processing; PACS and imaging informatics; image perception, observer performance, and technology assessment; ultrasonic imaging and signal processing; and computer-aided diagnosis. Attend the many special events and workshops to enhance your conference experience.

Join Dr. John Gore, Director of the Institute of Imaging Science at Vanderbilt University who will present "Challenges and Opportunities of Ultra-High Field MRI and MRS for the all symposium plenary presentation on Monday afternoon (see page 3).

Take time to learn more about the latest components and systems related to medical imaging by visiting the exhibition.

Learn, network, and enjoy your time in San Diego.

2008 Symposium Chairs:

Milan Sonka,
The Univ. of Iowa

Armando Manduca,
Mayo Clinic

SPIE gratefully acknowledges the following cooperating organizations:

AAPM—American Association of Physicists in Medicine
APS—American Physiological Society
CARS—Computer Assisted Radiology and Surgery
IS&T—The Society for Imaging Science and Technology
MIPS—Medical Image Perception Society
RSNA—Radiological Society of North America
SIIM—Society for Imaging Informatics in Medicine
SMI—The Society for Molecular Imaging
The DICOM Standards Committee

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

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Tues-Thurs	6915	**Computer-Aided Diagnosis** *(Giger, Karssemeijer)* 8
Sun-Tues	6916	**Physiology, Function, and Structure from Medical Images** *(Hu, Clough)* 8
Weds-Thurs	6917	**Image Perception, Observer Performance, and Technology Assessment** *(Sahiner, Manning)* 8
Sun-Tues	6918	**Visualization, Image-guided Procedures, and Modeling** *(Miga, Cleary)* 9
Weds-Thurs	6919	**PACS and Imaging Informatics** *(Andriole, Siddiqui)* 9
Sun-Mon	6920	**Ultrasonic Imaging and Signal Processing** *(McAleavey, D'hooge)* 9

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Daily Event Schedule

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16 February	17 February	18 February	19 February	20 February	21 February

Courses

SC882 **Computer-Aided Diagnosis** *(Giger, Karssemeijer, van Ginneken, Summers)* 8:30 am to 5:30 pm, $480 / $570

SC883 **Consistent Color and Grayscale Presentation for Medical Color Displays** *(Roehrig, Dallas, Krupinski, Fan)* 8:30 am to 12:30 pm, $290 / $340

SC086 **Fundamentals of Medical Image Processing and Analysis** *(Deserno)* 8:30 am to 5:30 pm, $480 / $570

SC884 **Validation in Medical Image Processing (VMIP)** *(Jannin)* 8:30 am to 12:30 pm, $290 / $340

SC828 **An Introduction to Finite Elements for Medical Imaging** *(Miga)* 1:30 to 5:30 pm, $360 / $410

SC829 **MIC-GPU: High-Performance Computing for Medical Imaging on Programmable Graphics Hardware (GPU)** *(Mueller)* 1:30 to 5:30 pm, $290 / $340

WS776 **Writing for Publication in Medical Imaging** *(Hanson)* 8:30 am to 12:30 pm, $100 / $150

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

Technical Conferences

6913 **Physics of Medical Imaging** *(Hsieh, Samei)* p. 8

6914 **Image Processing** *(Reinhardt, Pluim)* p. 8

6915 **Computer-Aided Diagnosis** *(Giger, Karssemeijer)* p. 8

6916 **Physiology, Function, and Structure from Medical Images** *(Hu, Clough)* p. 8

6917 **Image Perception, Observer Performance, and Technology Assessment** *(Sahiner, Manning)* p. 8

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6919 **PACS and Imaging Informatics** *(Andriole, Siddiqui)* p. 9

6920 **Ultrasonic Imaging and Signal Processing** *(McAleavey, D'hooge)* p. 9

SC471 **Principles and Advancements in X-ray Computed Tomography** *(Hsieh)* 8:30 am to 12:30 pm, $355 / $405

SC771 **Monte Carlo Simulation of Radiation Imaging Systems** *(Badano, Sempau)* 8:30 am to 12:30 pm, $290 / $340

SC358 **X-Ray Detector Performance: Principles and Measurements using a Linear Systems Approach** *(Cunningham)* 1:30 to 5:30 pm, $290 / $340

WS815 **Monte Carlo Simulation of Radiation Imaging Systems - Hands-on Tutorial** *(Badano, Sempau)* 1:30 to 5:30 pm, $100 / $150

SC613 **Statistical Methods in Medical Imaging and Bioengineering with Applications to Observer Performance Evaluation** *(Krupinski, Chakraborty)* 8:30 am to 5:30 pm, $480 / $570

Special Events

Technical Workshop: **DICOM Working Group 23 and Application Hosting: What They Mean for Research in Medical Image Analysis** (6914) 5:45 to 7:45 pm, p.6

Technical Workshop: **Special Session: Virtual Endoscopy** (6916) 5:45 to 6:45 pm, p.6

Technical Workshop: **Modeling for Therapy Guidance and Medical Imaging** (6918) 5:45 to 7:45 pm, p.6

Poster Viewing, 1:30 to 9:00 pm, p.5

The Grants Process at NIH, 5:45 to 7:45 pm, p.4

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Plenary Presentation: **Challenges and Opportunities of Ultra-High Field MRI and MRS** *(Gore)* 4:00 pm, p.3

Poster Viewing, 7:15 am to 4:00 pm; 7:00 to 9:00 pm, p.5

Interactive Poster Reception and Awards, (Confs. 6914, 6916, 6918, 6920) 5:00 to 6:30 pm, p.5

Dessert with the Experts *(A Student Networking Event)* 6:30 to 7:30 pm, p.5

FREE Exhibition, 9:30 am to Noon; 1:00 to 4:00 pm, p.5

Technical Workshop: **Multi-Energy X-ray and CT Imaging: Where we are and where we will go?** (6913) 5:45 to 7:45 pm, p.7

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Meet the FDA *(Sutton)* 5:45 to 7:45 pm, p.4

Content-Based Image Retrieval: Major Challenges for Medical Applications, 5:45 to 7:45 pm, p.4

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Interactive Poster Reception and Awards, (Confs. 6913, 6915, 6919) 5:00 to 6:30 pm, p.5

Technical Workshop: **Critical Issues in Adapting CAD into the Clinic** (6915) 3:30 to 5:00 pm, p.7

Technical Workshop: **Recent Developments in ROC Analysis** (6917) 1:20 to 3:00 pm, p.7

Monday 18 February
4:00 pm

Plenary Presentation

Challenges and Opportunities of Ultra-High Field MRI and MRS

John C. Gore, Ph.D.
Vanderbilt Univ. Institute of Imaging Science

The development and applications to human subjects of magnetic resonance imaging systems at fields of 7 Tesla and above provide many new opportunities and technical challenges. The increased signal strength at higher fields enables higher resolution images to be acquired, which provides new insights into the structural anatomy of the brain. Specific contrast mechanisms such as those originating from the susceptibility of blood or chemical shift differences are enhanced at higher field, permitting novel information on e.g. chemical composition, pH or blood oxygenation to be derived with greater sensitivity. High resolution spectroscopy also benefits from the greater spectral dispersion at high fields, so that measurements of brain metabolites and neurotransmitters can be made with greater accuracy. These benefits have been realized in studies of brain structure and function including functional studies of neural connectivity. However, high field MR imaging is also affected by macroscopic field variations caused by inhomogeneities of magnetic susceptibility within the body, and these degrade spectra and introduce image distortions. Moreover, the performance of radiofrequency (RF) coils is also affected at higher fields, and it is more difficult to create uniform RF fields within large objects. These challenges are being met using various technical innovations such as dynamic shimming, the use of parallel arrays of coils, novel spectral-spatial excitation methods, novel pulse sequences and post-acquisition digital processing. In combination these efforts promise to allow ultra-high field imaging and spectroscopy to achieve their full potential.

John C. Gore, Ph.D., is Director of the Institute of Imaging Science and Chancellor's University Professor of Radiology and Radiological Sciences, Biomedical Engineering, Physics and Molecular Physiology and Biophysics at Vanderbilt University. Dr. Gore obtained his Ph.D. in Physics at the University of London in the UK in 1976 and has been an active leader in imaging research and applications for over 30 years. He also holds a degree in Law. He is an elected fellow of the American Institute of Medical and Biological Engineering, the International Society for Magnetic Resonance in Medicine (ISMRM), and the Institute of Physics (UK). In 2004 Dr. Gore was awarded the Gold Medal of the ISMRM for his contributions to the field of magnetic resonance imaging. He has served twice as a trustee of the ISMRM and is editor-in-chief of the journal Magnetic Resonance Imaging. He founded the pioneering MRI research program at Hammersmith Hospital in the UK in the late 1970's prior to establishing and directing the MRI research program at Yale University from 1982-2002. He has published over 400 original papers and contributions within the medical imaging field. His research interests include the development and application of imaging methods for understanding tissue physiology and structure, molecular imaging and functional brain imaging.

The Grants Process at NIH

Sunday 17 Febraury · 5:45 to 7:45 pm · Royal Palm I-III Room

Moderator: **Xiang-Ning Li,** Ctr. for Scientific Review NIH/HHS

The National Institutes of Health (NIH) is a major source of basic research support to academia and industry for the development of new technology for medical imaging. At the 2007 Medical Imaging meeting, representatives of two of the top funding institutes presented details of their areas of interest and new directions in imaging technology. However, to get support, one must prepare a grant application and the art form of preparing such an application and how they are evaluated at NIH remains a mystery to many. The process of evaluation is called Peer Review and is the means by NIH is able to evaluate and select the best science for funding, and in turn provide constructive feedback and guidance to those who are not successful.

This planned session at the SPIE Medical Imaging meeting will focus on two points, the art of grantsmanship and how grant applications are evaluated through peer review. Members of the SPIE Medical Imaging community will provide thoughts and insights into the preparation of applications for NIH support, and an NIH representative who manages grant reviews for imaging technology will speak on the process of peer review. Finally, a mock study section will be conducted to show the specifics of how discussions go and what type of details are required.

The objective of this workshop would be to provide some idea of the grantsmanship effort and what NIH study section reviewers are looking for in a successful grant application. One speaker will be a senior member of the academic community who are also successful grantees with previous experience in review as a permanent member and past chair of the Biomedical Imaging Study Section. In addition, for those in the private sector in small businesses, a second talk will involve the process by which they can also apply for grant support under the Small Business Innovative Research Program. Discussions will included what considerations are important in preparing a grant application, in amending one, and with new issues in human subjects and budgets.

The academic speaker will be Erik Ritman, M.D., Ph.D, Professor, Department of Physiology and Biomedical Engineering, Mayo Clinic, Rochester, New York on considerations of preparing an application for basic research and on revising an initially unsuccessful one. In addition, David Vilkomerson, President, DVX, LLC, Princeton, New Jersey, will speak on preparing applications for small business research support and the differences between a SBIR and basic research application.

There will also be a Monday morning session that will provide an opportunity to meet with representatives of Center for Scientific Review and several of the main imaging technology funding Institutes of NIH on a one-on-one basis to ask specific individual questions.

NIH One-on-One Forum

Monday 18 February · 9:00 to 11:30 am · Royal Palm VI Room

This session that will provide an opportunity meet with representatives of Center for Scientific Review and several of the main imaging technology funding Institutes of NIH on a one-on-one basis to ask specific individual questions.

Content-Based Image Retrieval: Major Challenges for Medical Applications

Tuesday 19 February · 5:45 to 7:45 pm · San Diego Room

Moderators:
Thomas Deserno, Aachen Univ. of Technology (Germany)
L. Rodney Long, National Library of Medicine/NIH,

Panelists:
Sameer Antani, National Library of Medicine/NIH
Hayit Greenspan, Tel-Aviv Univ. (Israel)
Agma Traina, Univ. of São Paulo at São Carlos (Brazil)
Henning Mueller, Univ. and Hospitals of Geneva (Switzerland)

Papers published in the technical literature regularly report on experimental implementation of Content-Based Image Retrieval (CBIR) algorithms and prototype systems, yet the use of CBIR technology for either biomedical research or clinical routine appears to be very limited. While there is widespread enthusiasm for CBIR among the engineering research community, the incorporation of this technology into the solution of practical medical problems is a goal yet to be realized. The obstacles to the use of CBIR in medicine include

- the lack of effective collaborations between medical and engineering experts;
- the lack of effective representation of the medical content by low-level mathematical features;
- the lack of thorough evaluation of CBIR concepts;
- the lack of appropriate tools for medical experts to experiment with a CBIR application;

This workshop aims to bring together CBIR researchers in a forum to present an overview of where we stand on moving CBIR into practical biomedical use, with the goal of creating new synergy between the medical and engineering communities for the use of this technology.

Meet the FDA

Tuesday 19 February · 5:45 to 7:45 pm · Royal Palm I-III Room

William M. Sutton, CDRH/Food and Drug Administration

FDA's Center for Devices and Radiological Health (CDRH) is responsible for ensuring the safety and effectiveness of medical devices and eliminating unnecessary human exposure to man-made radiation from medical, occupational and consumer products. There are thousands of types of medical devices, from heart pacemakers to contact lenses. Radiation-emitting products regulated by FDA include microwave ovens, video display terminals, and medical ultrasound and x-ray machines. Attendees to this session will learn about device classification, registration and listing, premarket notification [510(k)] and premarket approval (PMA). The regulatory requirements of the Electronic Product and Radiation Controls (EPRC) will also be covered during this session. In addition, the new device provisions of the FDA Amendments Act (FDAAA) of 2007 will be discussed.

William (Bill) Sutton has been employed by the Food and Drug Administration (FDA) for over 23 years. He has been a consumer safety officer in the Center for Devices and Radiological Health's (CDRH's) industry and international assistance program since 1995 and currently serves as the Deputy Director. Prior to joining the Division of Small Manufacturers, International and Consumer Assistance (DSMICA), he served 12 years in the Office of Device Evaluation. His primary duties were to perform preliminary reviews of medical device applications. Since 1998, Mr. Sutton has done extensive work with the International Relations Staff. This group facilitates commerce in medical devices by pursuing harmonization of regulatory requirements and by encouraging mutual recognition agreements between the U.S. and other countries.

The Michael B. Merickel

Best Student Paper Award

The symposium chairs will announce the best student paper for the Medical Imaging 2008 symposium at the Monday Plenary Presentation Session in the Town & Country Room.

Dessert with the Experts

A Student Networking Event

Monday 18 February · 6:30 to 7:30 pm

See Ticket for Location · Seating Limited

FREE, Students receive one complimentary ticket with registration.

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.

Poster Awards during Poster Receptions

Monday 18 February · 5:00 pm
Wednesday 20 February · 5:30 pm
Golden Pacific Ballroom Poster Area

Poster Awards

Poster awards will be presented during the Interactive Poster Sessions/Receptions on Monday and Wednesday. Award ribbons will indicate the winning posters.

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. In addition, cum laude poster award recipients will be recognized in the Proceedings of SPIE volumes. If authors agree, the first place winners' posters will be on display the following day in the foyer.

Recognition levels:
Each conference will recognize a selected poster at the cum laude level in each poster session for the quality of work presented and for the presentation itself. A number of posters, limited to no more than five to ten percent of the best posters presented, 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.

Best Student Paper Award

Congratulations to the following student authors who were chosen from 79 submitters to advance to the final round in the Michael B. Merickel Best Student Paper competition. Join us on Monday at 4:00 pm in the Town & Country Room for the announcement of the winner and runner up.

Hugo de las Heras, Experimental proof of an idea for a CT-scanner with dose reduction potential (6913-6)

Samuel Richard, NEQ and task in dual-energy imaging: from cascaded systems analysis to human observer performance (6913-36)

Xiang Li, Towards assessing the diagnostic influence of dose reduction in pediatric CT: a study based on simulated lung nodules (6913-56)

Shun C. Xu, Multivariate longitudinal statistics for neonatal-pediatric brain tissue development (6914-11)

Darko Zikic, Deformable registration of 3D vessel structures to a single projection image (6914-37)

Satish E. Viswanath, A consensus embedding approach for segmentation of high resolution in vivo prostate magnetic resonance imagery (6915-29)

Sergei V. Fotin, The impact of pulmonary nodule size estimation accuracy on the measured performance of automated nodule detection systems (6915-51)

Bernard Chiu, Quantification of carotid arteries atherosclerosis using 3D ultrasound images and area-preserving flattened maps (6916-2)

Jung Wook Suh, Registration of prone and supine colons in the presence of topological changes (6916-11)

Rene Werner, Modeling respiratory lung motion: a biophysical approach using finite element methods (6916-23)

Paul Wighton, Existence and perception of textural information predictive of atypical nevi - a preliminary study (6917-18)

Joel M. Witten, Singular vectors of an imaging system matrix as efficient channels for the ideal observer in detection tasks involving non-Gaussian distributed lumpy images (6917-29)

Damien Litchfield, Learning from others: effects of viewing another person's eye movements while searching for chest nodules (6917-40)

Selen C. Atasoy, Real-time respiratory motion tracking: roadmap correction for hepatic artery catheterizations (6918-40)

Jeffrey S. Bax, 3D transrectal ultrasound prostate biopsy using a mechanical imaging and needle-guidance system (6918-76)

Thomas K. Chen, A real-time ultrasound calibration system with automatic accuracy control and incorporation of ultrasound beam thickness (6918-81)

Ryan D. Datteri, Local versus global texture analysis for lung nodule image retrieval (6919-8)

Women's Networking Lunch

Tuesday 19 February · 12:10 to 1:20 pm

Join other women in the field for informal discussions and networking during the scheduled lunch on Tuesday. Sign up at registration required before coffee break on Tuesday.

FREE Exhibition

Stay up to date on industry trends

The Medical Imaging 2008 exhibition includes imaging components, equipment and instruments offered by industry suppliers. Representatives will be on hand during exhibit hours to answer questions about the products and services being offered.

Exhibition and Poster Reception
Monday 18 February . . . . . 5:00 to 6:30 pm

Exhibition Hours
Tuesday 19 February. . . . . 9:30 am to Noon; 1:00 to 4:00 pm
Wednesday 20 February . . . . . 9:30 am to Noon; 1:00 to 4:00 pm

Poster Set Up, Viewing, Presentations, and Receptions

Sunday/Monday

(Image Processing, Physiology, Function, and Structure from Medical Imaging; Visualization, Image-guided Procedures, and Modeling; Ultrasonic Imaging and Signal Processing)

Author Poster Set Up . . . . . Sunday from Noon to 1:30 pm
Sunday Poster Viewing . . . . . 1:30 to 9:00 pm
Monday Poster Viewing. . . . . 7:15 am to 4:00 pm
Interactive Poster Reception,
Monday . . . . . 5:00 to 6:30 pm
Extended Poster Viewing . . . . . 7:00 to 9:00 pm

Tuesday/Wednesday

(Physics of Medical Imaging; Computer-Aided Diagnosis, Image Perception, Observer Performance, and Technology Assessment; PACS and Imaging Informatics)

Author Poster Set Up . . . . . Tuesday beginning at 9:30 am
Tuesday Poster Viewing . . . . . 9:40 am to 9:00 pm
Wednesday Poster Viewing. . . . . 7:30 am to 4:00 pm
Interactive Poster Reception,
Wednesday . . . . . 5:30 to 7:00 pm
Extended Poster Viewing . . . . . 7:00 to 9:00 pm

Sunday Workshops

17 February

Image Processing

Conference 6914
San Diego Room · 5:45 to 7:45 pm

DICOM Working Group 23 and Application Hosting: What They Mean for Research in Medical Image Analysis

Chair: **David Haynor,** Univ. of Washington

Speakers:
Lawrence Tarbox, Washington Univ. in St. Louis
Gianluca Paladini, Siemens Corporate Research
Chris Wood, Clario Medical Imaging
Laurence Clarke, National Cancer Institute, NIH

Getting raw images from local databases and archiving/displaying computed or parametric images is a complex process that greatly increases the difficulty of bringing methods of medical image analysis into the clinic. A standardized interface for these purposes would make it easier for researchers and vendors to introduce innovative methods into clinical practice. With this in mind, DICOM Working Group 23 was organized to explore the concept of Application Hosting, an environment that allows imaging applications function as plugins, greatly decreasing the problems of adapting applications to differing local environments. The working group has produced a specification for Application Hosting, and several groups are developing implementations of the specification that will be ready for distribution in early 2008. Dr. Lawrence Tarbox of Washington University, the chairman of Working Group 23, will give an overview of its goals and accomplishments to date, including an open source implementation of the specification. Speakers from Clario Medical Imaging and the NCI will survey commercial implementations of Application Hosting and the implications for medical image analysis in relation to patient care and oncology specifically.

Physiology, Function, and Structure from Medical Images

Conference 6916
Golden West Room · 5:45 to 6:45 pm

Special Session: Virtual Endoscopy

On the occasion of the 10th anniversary of the Virtual Endoscopy Special Track of the Physiology and Function conference, this special session will review the progress in virtual endoscopy over the past decade and highlight the major advances presented at the SPIE meeting. Presentations by William Higgins, Ron Summers and Ken Mori will review the overall history of virtual endoscopy and the major accomplishments in virtual colonoscopy and virtual bronchoscopy. The session will conclude with a panel discussion to place the developments in context and speculate on the future of virtual endoscopy.

Visualization, Image Guided Procedures, and Modeling

Conference 6918
California Room · 5:45 to 7:45 pm

Modeling for Therapy Guidance and Medical Imaging

Chair: **Michael I. Miga,** Vanderbilt Univ.

Speakers:
Michael I. Miga, Vanderbilt Univ. and Vanderbilt University Medical Ctr.
Keith D. Paulsen, Dartmouth College
Christos Davatzikos, Univ. of Pennsylvania School of Medicine
Michael Lawrenchuk, Materialise Inc.

Challenges in the computational modeling of living systems include understanding the nature of physiological occurrences, developing mathematical descriptions and/or constitutive relationships that reflect physical behavior, and developing methods to measure these events to produce model-validating frameworks. In the past, these challenges have been the predominant concerns within the biomedical modeling community. However, with the recent breakthroughs in CPU processing power and medical image processing, the concept of using patient-specific computer models apart from their predictive roles to that of a more integrated one within therapy guidance and medical imaging is rapidly becoming possible. In this workshop, the role of modeling within medical imaging will be discussed.

Tuesday Workshops

19 February

Physics of Medical Imaging

Conference 6913
Town & Country Room · 5:45 to 7:45 pm

Multi-Energy X-ray and CT Imaging: Where we are and where we will go?

Panel Moderator:
Katsuyuki Taguchi, Johns Hopkins Univ.

Panelists:
Willi A. Kalender, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany)
Chris Shaw, The Univ. of Texas M.D. Anderson Cancer Ctr.
Cynthia H. McCollough, Mayo Clinic
Ami Altman, Philips Medical Systems (Israel)
Eric C. Frey, Johns Hopkins Univ.
Thomas G. Flohr, Siemens Medical Solutions (Germany)

Katsuyuki Taguchi, Johns Hopkins Univ.

Two major x-ray-based techniques used for medical imaging are digital radiography (DR) and computed tomography (CT), both of which mainly use the intensity of x-ray flux to obtain gray scale images. Recently, there have been strong reviving research interests in an old concept: the use of the energy spectral information. Questions are then asked. What is new? Why now again? What are new techniques? What are potential clinical applications? In this interactive workshop, we will discuss various technical advances and clinical applications on dual- and multi-energy x-ray DR and CT imaging.

Computer-Aided Diagnosis

Conference 6915
Golden West Room · 5:45 to 7:45 pm

Real-time Demonstrations and Live Performance Assessments

Chairs: **Michael F. McNitt-Gray,** Univ. of California/Los Angeles; **Bram van Ginneken,** Univ. Medisch Ctr. Utrecht (Netherlands); **Maryellen L. Giger,** The Univ. of Chicago; **Nico Karssemeijer,** Radboud Univ. Nijmegen (Netherlands)

This workshop will show live demonstrations by teams of CAD developers from mammography, lung CT, colon CT and others showing their computer-aided detection and/or computer-aided diagnosis systems. In addition there will be a special section on CAD performance assessment focused on classification of mammographic masses.

The workshop will start with a short overview of the participating teams and systems. Next, the audience can interact with the teams during live demonstrations of the systems. In a plenary session at the end of the workshop, the results obtained by the teams participating in the mammography mass classification assessment will be presented and compared to the performance of radiologists. Finally, comprehensive CAD competitions to be organized as part of future SPIE Medical Imaging CAD conferences will be announced and discussed with the audience.

Participation in this workshop provides a unique opportunity to see CAD systems in action and interact with their developers. The program and more information about the workshop, including a call for participation, can be found at the website http://cadworkshop-spiemi.isi.uu.nl/

PACS and Imaging Informatics

Conference 6919
California Room · 5:45 to 7:45 pm

DICOM

Chair: **Robert J. Horn,** Agfa Corp.

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.

Thursday Workshops

21 February

Computer-Aided Diagnosis

Conference 6915
Golden West Room · 3:30 to 5:00 pm

Critical Issues in Adapting CAD into the Clinic

Chair: **Robert M. Nishikawa,** The Univ. of Chicago,

This year, 2008, marks the tenth anniversary of the first computer-aided detection (CADe) system approved for clinical use in the United States. While we are approaching approximately 50% of screening mammograms being read with computer assistance in the US, there is still controversy to whether the technology is beneficial. This is a result of two major problems: the difficulty in conducting clinical studies and the difficulty for radiologists to use CADe optimally. Measuring the benefits of CADe is difficult because the cancer prevalence is low, resulting in the need for large study cohorts (probably on the order of 100,000). Furthermore, clinical studies are subject to biases, variability in both radiologists' performance and patient populations, and methodological difficulties. As a result, there are conflicting results from the approximately ten studies that have been published to date. Underlying the clinical evaluations is the difficulty in training radiologists to use CADe effectively. The low cancer prevalence means that the number of cancers that a radiologist might miss each year is low, so the opportunity for radiologists to know that CADe has helped them detected a missed cancer is rare. Further, to learn how to correctly recognize computer false detections takes time, up to 2 years in one study. In this context, we need to develop useful training methods so that radiologists can use CADe to obtain the maximum benefit possible. In this session, the panel will address these issues and we will seek solutions from the within the panel and from the audience.

Robert Nishikawa is on the Scientific Advisory Board of Dexela, Ltd. (London, UK). He is a shareholder in Hologic, Inc (Bedford, MA). He and the University of Chicago receive royalties and research support from Hologic, Inc.

Image Perception, Observer Performance, and Technology Assessment

Conference 6917
San Diego Room · 1:20 to 3:00 pm

Recent Developments in ROC Analysis

Moderators:
Kevin S. Berbaum, Univ. of Iowa
Berkman Sahiner, Univ. of Michigan

Panelists:
Dev P. Chakraborty, Univ. of Pittsburgh
Darrin C. Edwards, Univ. of Chicago
Brandon D. Gallas, U.S. Food and Drug Administration
Philip F. Judy, Harvard Medical School and Brigham and Women's Hospital

Receiver operating characteristic (ROC) analysis has been around since the 1950's, and has been used in evaluating medical imaging systems since at least the 1970's. From an initial role as an evaluation method for an imaging system interpreted by a single observer, ROC and its extensions (LROC, FROC) have evolved into multi-reader, multi-case (MRMC), multi-modality tools that have the capability to analyze multiple location-specific marks per image. Along this continuing evolution, numerous research topics have been arising. In this workshop, a sampling of current research topics will be presented by the panelists.

After an introduction to ROC analysis and its extensions, discussion topics will include:

- Experiments and implications associated with asymmetric ROC curves
- Figures of merit for localization specific tasks
- Analysis and validation for localization-specific data
- Status of current analytical methods for localization data
- Probabilistic foundation to analyze and unify MRMC variance estimation methods such as the jackknife (DBM) and bootstrap
- Generalizing the variance methods for fully-crossed data to the missing data problem
- Current limitations of ROC and MRMC analyses
- Multi-class ROC analysis: Theoretical development and practical results under models that restrict the number of degrees of freedom.

Conference 6913

Room: Town & Country

Monday-Thursday 18-21 Feb. 2008
Proceedings of SPIE Vol. 6913

Physics of Medical Imaging

Conference Chairs: **Jiang Hsieh,** GE Healthcare; **Ehsan Samei,** Duke Univ.

Program Committee: **Aldo Badano,** U.S. Food and Drug Administration; **Mats E. Danielsson,** Royal Institute of Technology (Sweden); **Jeffrey A. Fessler,** Univ. of Michigan; **Thomas G. Flohr,** Siemens Medical Solutions (Germany); **Christoph Hoeschen,** Forschungszentrum für Umwelt und Gesundheit, GmbH (Germany); **Hee-Joung Kim,** Yonsei Univ. (South Korea); **Robert M. Nishikawa,** The Univ. of Chicago; **Michael Overdick,** Philips Research Labs. (Germany); **Norbert J. Pelc,** Stanford Univ.; **John A. Rowlands,** Sunnybrook and Women's Health Sciences Ctr. (Canada); **Katsuyuki Taguchi,** Johns Hopkins Univ.; **Richard L. Van Metter,** Carestream Health, Inc.; **Bruce R. Whiting,** Washington Univ. in St. Louis

Posters for this conference will be on display Tuesday and Wednesday, 19-20 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Wednesday evening from 5:30 to 7:00 pm. All poster awards will be presented at 6:00 pm during the reception.

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Conference 6914

Room: San Diego

Sunday-Tuesday 17-19 Feb. 2008
Proceedings of SPIE Vol. 6914

Image Processing

Conference Chairs: **Joseph M. Reinhardt,** The Univ. of Iowa; **Josien P. W. Pluim,** Univ. Medisch Ctr. Utrecht (Netherlands)

Program Committee: **Mostafa Analoui,** Pfizer Inc.; **Kyongtae Ty Bae,** Univ. of Pittsburgh; **Christian Barillot,** IRISA (France); **Benoit M. Dawant,** Vanderbilt Univ.; **Aaron Fenster,** Robarts Research Institute (Canada); **Alejandro F. Frangi,** Univ. Pompeu Fabra (Spain); **James C. Gee,** Univ. of Pennsylvania; **Guido Gerig,** Univ. of Utah; **David R. Haynor,** Univ. of Washington; **Tianhu Lei,** Univ. of Pennsylvania; **Boudewijn P. F. Lelieveldt,** Leids Univ. Medisch Ctr. (Netherlands); **Bostjan Likar,** Univ. v Ljubljani (Slovenia); **Murray H. Loew,** George Washington Univ.; **Anthony J. Maeder,** CSIRO ICT Ctr. (Australia); **Frederik Maes,** Katholieke Univ. Leuven (Belgium); **Sunanda D. Mitra,** Texas Tech Univ.; **Kensaku Mori,** Nagoya Univ. (Japan); **Sebastien Ourselin,** CMIC/Univ. College London (United Kingdom); **Daniel Rueckert,** Imperial College London (United Kingdom); **Punam K. Saha,** The Univ. of Iowa; **Julia A. Schnabel,** St. Hilda's College (United Kingdom) and Univ. of Oxford (United Kingdom); **Colin Studholme,** Univ. of California/San Francisco; **Philippe Thévenaz,** Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Jayaram K. Udupa,** Univ. of Pennsylvania; **Bram van Ginneken,** Univ. Medisch Ctr. Utrecht (Netherlands); **Andreas Wahle,** The Univ. of Iowa

(ST) = Short Talk — Presenters have been selected to prepare short 10-minute presentations.

Posters for this conference will be on display Sunday and Monday, 17-18 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Monday evening from 5:00 to 6:30 pm. All poster awards will be presented at 5:30 pm during the reception.

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Conference 6915

Room: Golden West

Tuesday-Thursday 19-21 Feb. 2008
Proceedings of Vol. 6915

Computer-Aided Diagnosis

Conference Chairs: **Maryellen L. Giger,** The Univ. of Chicago; **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

Program Committee: **Stephen Aylward,** Kitware, Inc.; **Kyongtae Ty Bae,** Univ. of Pittsburgh; **J. Michael Brady,** Univ. of Oxford (United Kingdom); **Heang-Ping Chan,** Univ. of Michigan; **Marleen de Bruijne,** Univ. of Copenhagen (Denmark); **Simon Duchesne,** Univ. de Rennes I (France); **Horst Karl Hahn,** MeVis GmbH (Germany); **Shih-Chung Benedict Lo,** Georgetown Univ. Medical Ctr.; **Michael F. McNitt-Gray,** Univ. of California/Los Angeles; **Kensaku Mori,** Nagoya Univ. (Japan); **Noboru Niki,** The Univ. of Tokushima (Japan); **Carol L. Novak,** Siemens Corporate Research; **Mary S. Pastel,** U.S. Food and Drug Administration; **Ronald M. Summers,** National Institutes of Health; **Bram van Ginneken,** Univ. Medical Ctr. Utrecht (Netherlands); **Rafael Wiemker,** Philips Research Labs. (Germany)

(ST) = Short Talk — Presenters have been selected to prepare short 10-minute presentations.

Posters for this conference will be on display Tuesday and Wednesday, 19-20 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Wednesday evening from 5:30 to 7:00 pm. All poster awards will be presented at 6:00 pm during the reception.

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Conference 6916

Room: Golden West (Sun-Mon)
Royal Palm I-III (Tues)
Sunday-Tuesday 17-19 Feb. 2008
Proceedings of SPIE Vol. 6916

Physiology, Function, and Structure from Medical Images

Conference Chairs: **Xiaoping P. Hu,** Emory Univ.; **Anne V. Clough,** Marquette Univ.

Program Committee: **Amir A. Amini,** Univ. of Louisville; **Juan Raul Cebral,** George Mason Univ.; **Andreas H. Hielscher,** Columbia Univ.; **William E. Higgins,** The Pennsylvania State Univ.; **Eric A. Hoffman,** The Univ. of Iowa Hospitals and Clinics; **Armando Manduca,** Mayo Clinic; **Ralph Müller,** ETH Zürich (Switzerland); **Erik L. Ritman,** Mayo Clinic; **Ronald M. Summers,** National Institutes of Health; **Merryn H. Tawhai,** The Univ. of Auckland (New Zealand); **John B. Weaver,** Dartmouth College; **Felix W. Wehrli,** Univ. of Pennsylvania

Posters for this conference will be on display Sunday and Monday, 17-18 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Monday evening from 5:00 to 6:30 pm. All poster awards will be presented at 5:30 pm during the reception.

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Conference 6917

Room: San Diego

Wednesday-Thursday 20-21 Feb. 2008
Proceedings of SPIE Vol. 6917

Image Perception, Observer Performance, and Technology Assessment

Conference Chairs: **Berkman Sahiner,** Univ. of Michigan; **David J. Manning,** Univ. of Cumbria (United Kingdom)

Program Committee: **Craig K. Abbey,** Univ. of California/Santa Barbara; **Kevin S. Berbaum,** The Univ. of Iowa Hospitals and Clinics; **Brandon D. Gallas,** U.S. Food and Drug Administration; **Yulei Jiang,** The Univ. of Chicago; **Matthew A. Kupinski,** College of Optical Sciences/The Univ. of Arizona; **Claudia Mello-Thoms,** Univ. of Pittsburgh; **David L. Wilson,** Case Western Reserve Univ.

Posters for this conference will be on display Tuesday and Wednesday, 19-20 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Wednesday evening from 5:30 to 7:00 pm. All poster awards will be presented at 6:00 pm during the reception.

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Conference 6918

Room: California

Sunday-Tuesday 17-19 Feb. 2008
Proceedings of SPIE Vol. 6918

Visualization, Image-guided Procedures, and Modeling

Conference Chairs: **Michael I. Miga,** Vanderbilt Univ.; **Kevin R. Cleary,** Georgetown Univ.

Program Committee: **Wolfgang Birkfellner,** Medizinische Univ. Wien (Austria); **Baowei Fei,** Case Western Reserve Univ.; **Robert L. Galloway,** Vanderbilt Univ.; **George J. Grevera,** St. Joseph's Univ.; **Steven L. Hartmann,** Medtronic Navigation; **David Robert Haynor,** Univ. of Washington; **William E. Higgins,** The Pennsylvania State Univ.; **David R. Holmes,** Mayo Clinic; **Pierre Jannin,** Univ. de Rennes I (France); **Terry M. Peters,** Robarts Research Institute (Canada); **Frank Sauer,** Siemens Corporate Research, Inc.; **Guy Shechter,** Philips Research North America; **Yeong Gil Shin,** Seoul National Univ. (South Korea); **Jayaram K. Udupa,** Univ. of Pennsylvania; **Jay B. West,** Accuray, Inc.; **Ivo Wolf,** German Cancer Research Ctr. (Germany); **Kenneth H. Wong,** Georgetown Univ.

Posters for this conference will be on display Sunday and Monday, 17-18 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Monday evening from 5:00 to 6:30 pm. All poster awards will be presented at 5:30 pm during the reception.

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Conference 6919

Room: California

Wednesday-Thursday 20-21 Feb. 2008
Proceedings of SPIE Vol. 6919

PACS and Imaging Informatics

Conference Chairs: **Katherine P. Andriole,** Brigham & Women's Hospital/Harvard Medical School; **Khan M. Siddiqui,** VA Maryland Health Care System

Program Committee: **William W. Boonn,** Univ. of Pennsylvania; **Kevin Robert Cleary,** Georgetown Univ.; **Janice C. Honeyman-Buck,** Univ. of Florida; **Steven C. Horii,** Univ. of Pennsylvania; **Heinz U. Lemke,** Technische Univ. Berlin (Germany); **Brent J. Liu,** Univ. of Southern California; **John B. Strauss,** FUJIFILM Medical Systems USA, Inc.; **Wyatt Tellis,** Univ. of California/San Francisco

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DICOM
California Room · Tues. 5:45 to 7:45 pm
Robert J. Horn, Agfa Corp.

Posters for this conference will be on display Tuesday and Wednesday, 19-20 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Wednesday evening from 5:30 to 7:00 pm. All poster awards will be presented at 6:00 pm during the reception.

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Conference 6920

Room: Royal Palm I-III

Sunday-Monday 17-18 Feb. 2008
Proceedings of SPIE Vol. 6920

Ultrasonic Imaging and Signal Processing

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

Program Committee: **Jeffrey C. Bamber,** Univ. of London (United Kingdom); **Stanislav Y. Emelianov,** The Univ. of Texas/Austin; **James F. Greenleaf,** Mayo Clinic; **Michael F. Insana,** Univ. of Illinois at Urbana-Champaign; **Jørgen Arendt Jensen,** Danmarks Tekniske Univ. (Denmark); **Kathryn R. Nightingale,** Duke Univ.; **K. Kirk Shung,** Univ. of Southern California; **Kai Erik Thomenius,** General Electric Co.; **David H. R. Vilkomerson,** DVX LLC; **William F. Walker,** Univ. of Virginia

Posters for this conference will be on display Sunday and Monday, 17-18 February in the Golden Pacific Ballroom. The reception for these posters, with authors in attendance at his or her poster, will be Monday evening from 5:00 to 6:30 pm. All poster awards will be presented at 5:30 pm during the reception.

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Conference 6914 continued
Image Processing
Room: San Diego

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

Segmentation I: Methodology
Session Chair: **Guido Gerig,** Univ. of Utah

8:00 am: **Area prior constrained level set evolution**, Ismail Ben Ayed, Shuo Li, GE Healthcare (Canada); Ali Islam, Greg Garvin, St. Joseph's Hospital (Canada); Rethy Chhem, London Health Sciences Ctr. (Canada) . . . . . [6914-01]

8:20 am: **A resistive-network model for image segmentation**, Peter J. Yim, Robert Wood Johnson Medical School . . . . . [6914-02]

8:40 am: **A new distribution metric for image segmentation**, Romeil S. Sandhu, Georgia Institute of Technology; Tryphon Georgiou, Univ. of Minnesota; Allen Tannenbaum, Georgia Institute of Technology . . . . . [6914-03]

9:00 am: **Segmenting images analytically in shape space**, Yogesh Rathi, Harvard Medical School; Samuel Dambreville, Georgia Institute of Technology; Marc Niethammer, Harvard Medical School; James Malcolm, Georgia Institute of Technology; James Levitt, Martha Shenton, Harvard Medical School; Allen Tannenbaum, Georgia Institute of Technology . . . . . [6914-04]

9:20 am: **A unified framework for joint registration and segmentation**, Konstantin Ens, Univ. zu Lübeck (Germany) and Philips Research Europe Hamburg (Germany); Jens von Berg, Sven Kabus, Cristian Lorenz, Philips Research Europe Hamburg (Germany); Bernd Fischer, Univ. zu Lübeck (Germany) . . . . . [6914-05]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

Cardiovascular
Session Chair: **Amir A. Amini,** Univ. of Louisville

8:00 am: **Fully automatic detection and visualization of patient specific coronary supply regions**, Dominik Fritz, Siemens Medical Solutions (Germany); Alexander Wiedemann, Rüdiger Dillmann, Univ. Karlsruhe (Germany); Michael Scheuering, Siemens Medical Solutions (Germany) . . . . . [6916-01]

8:20 am: **Quantification of carotid arteries atherosclerosis using 3D ultrasound images and area-preserving flattened maps**, Bernard Chiu, Micaela Egger, J. David Spence, Grace Parraga, Aaron Fenster, Robarts Research Institute (Canada) [6916-02]

8:40 am: **Accelerated circumferential strain quantification of the left ventricle using CIRCOME: simulation and factor analysis**, Abbas N. Moghaddam, Univ. of California/Los Angeles and California Institute of Technology; Paul Finn M.D., Univ. of California/Los Angeles . . . . . [6916-03]

9:00 am: **Automatic selection of an optimal systolic and diastolic reconstruction window for dual source CT coronary angiography**, Harald Seifarth M.D., Michael Püsken M.D., Susanne Wienbeck M.D., Walter Heindel M.D., David Maintz M.D., Kai-Uwe Juergens M.D., Westfälische Wilhelms-Univ. Münster (Germany) . . . . . [6916-04]

9:20 am: **Evaluation of model based blood flow quantification from rotational angiography**, Irina Waechter, Univ. College London (United Kingdom); Joerg Bredno, Philips Research Europe Aachen (Germany); Roel Hermans, Philips Medical Systems Nederland (Netherlands); Jürgen Weese, Philips Research Europe Aachen (Germany); Dean C. Barratt, David J. Hawkes, Univ. College London (United Kingdom) . . . . . [6916-05]

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

6916 continues on page 11

Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Visualization
Session ChairS: **Jayaram Koteshwar Udupa,** Univ. of Pennsylvania;
George J. Grevera, St. Joseph's Univ.

8:00 am: **Three-dimensional display, stereo and beyond**, William J. Dallas, Hans Roehrig, The Univ. of Arizona; Daniel J. Allen, Southern Arizona VA Health Care System . . . . . [6918-01]

8:20 am: **Dual energy CT: how to best blend both energies in one fused image**, Christian D. Eusemann, Siemens Medical Solutions (Germany); David R. Holmes III, Mayo Clinic; Bernhard T. Schmidt, Thomas G. Flohr, Siemens Medical Solutions (Germany); Richard A. Robb, Cynthia H. McCollough, David M. Hough M.D., James E. Huprich M.D., Michael H. Wittmer M.D., Hasan Siddiki M.D., Joel G. Fletcher, Mayo Clinic. . . [6918-02]

8:40 am: **Java-based volume rendering**, Ruida Cheng, National Institutes of Health; Alexandra Bokinsky, Geometric Tools, Inc.; Paul F. Hemler, Hampden-Sydney College and National Institutes of Health; Evan S. McCreedy, Matthew J. McAuliffe, National Institutes of Health . . . . . [6918-03]

9:00 am: **Anatomical equivalence class based complete morphological descriptor for robust image analysis and abnormality detection**, Sajjad Baloch, Christos A. Davatzikos, Univ. of Pennsylvania [6918-04]

9:20 am: **Transfer function design for Fourier volume rendering and implementation using GPU**, Chang-Chieh Cheng, Yu-Tai Ching, National Chiao Tung Univ. (Taiwan) . . . . . [6918-05]

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

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

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

Beamforming/Image Formation I
Session Chair: **Stephen A. McAleavey,** Univ. of Rochester

8:00 am: **Beamformer post-processing for improved spatial resolution and SNR**, Kevin Owen, Drake A. Guenther, William F. Walker, Univ. of Virginia. [6920-01]

8:20 am: **Medical ultrasound digital beamforming on a massively-parallel processing array platform**, Paul Y. Chen, Michael Butts, Brad Budlong, Ambric, Inc. . . . . [6920-02]

8:40 am: **Real-time implementation of the echo signal processing and digital scan conversion for medical ultrasound imaging with a single TMS320C6416 DSP**, Choong Lee, Hak-Yeol Sohn, Sogang Univ. (South Korea); Dong-Hoon Han, LG Electronics Inc. (South Korea); Tai-Kyong Song, Sogang Univ. (South Korea) . . . . . [6920-03]

9:00 am: **C-mode reflection ultrasound images using PE-CMOS sensor: a preliminary study**, Chu-Chuan Liu, Georgetown Univ. Medical Ctr. and Virginia Polytechnic Institute and State Univ.; Shih-Chung B. Lo, Matthew Freedman, Georgetown Univ. Medical Ctr.; Marvin Lasser, Imperium, Inc.; Yue Wang, Virginia Polytechnic Institute and State Univ. . . . . [6920-04]

9:20 am: **A new ultrasound phased array applicator to treat prostate cancer using hyperthermia**, Ashraf Talaat-Ibrahim, Alexandria Univ. (Egypt). . . . . [6920-05]

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

6920 continues on page 11

Conference 6914 continued
Image Processing
Room: San Diego

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

Atlases and Population Studies

Session Chair: **Anthony J. Maeder,** Commonwealth Scientific and Industrial Research Organisation (Australia)

10:10 am: **Adaptive local multiatlas segmentation: application to heart segmentation in chest CT scans**, Eva M. van Rikxoort, Ivana Isgum, Marius Staring, Stefan Klein, Bram van Ginneken, Univ. Medisch Ctr. Utrecht (Netherlands) . . . . . [6914-06]

10:30 am: **Robust registration between cardiac MRI images and atlas for segmentation propagation**, Xiahai Zhuang, David J. Hawkes, William R. Crum, Univ. College London (United Kingdom); Redha Boubertakh, Sergio Uribe, King's College London (United Kingdom); David Atkinson, Univ. College London (United Kingdom); Philip G. Batchelor, Tobias Schaeffter, Reza Razavi, King's College London (United Kingdom); Derek L. G.Hill, Univ. College London (United Kingdom) . . . . . [6914-07]

10:50 am: **The SRI24 multichannel brain atlas: construction and applications**, Torsten Rohlfing, SRI International; Natalie M. Zahr, Stanford Univ. and SRI International; Edith V. Sullivan, Stanford Univ.; Adolf Pfefferbaum M.D., SRI International . . . . . [6914-08]

11:10 am: **A generalization of voxel-wise procedures for high-dimensional statistical inference using ridge regression**, Karl Sjöstrand, EXINI Diagnostics AB (Sweden); Valerie A. Cardenas, Univ. of California/San Francisco; Rasmus D. Larsen, Technical Univ. of Denmark (Denmark); Colin Studholme, Univ. of California/San Francisco . . . . . [6914-09]

11:30 am: **The evaluation of a population-based diffusion tensor image atlas using a ground truth method**, Wim Van Hecke, Univ. Antwerpen (Belgium); Alexander Leemans, Cardiff Univ. Brain and Repair Imaging Ctr. (United Kingdom); Emiliano D'Agostino, Univ. Ziekenhuizen Leuven (Belgium); Steve De Backer, Univ. Antwerpen (Belgium); Everhardt Vandervliet M.D., Paul M. Parizel, Univ. Hospital Antwerp (Belgium); Jan Sijbers, Univ. Antwerpen (Belgium) . . . . . [6914-10]

11:50 am: **Multivariate longitudinal statistics for neonatal-pediatric brain tissue development**, Shun C. Xu, Martin A. Styner, John H. Gilmore, The Univ. of North Carolina at Chapel Hill; Guido Gerig, The Univ. of Utah . . . . . [6914-11]

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

6914 continues on page 12

Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

Keynote and MRI Brain

Chair: **Xiaoping P. Hu,** Emory Univ.

10:10 am: **Multimodality MRI of neurodegenerative diseases (Keynote)** *(Invited Paper)*, Michael Weiner, Norbert Schuff, Susanne Mueller, Wang Zhan, Yu Zhang, Bruce Miller, Helena Chui, Univ. of California/San Francisco. . .[6916-06]

11:10 am: **Dynamic fMRI of a decision-making task**, Manbir Singh, Witaya Sungkarat M.D., Univ. of Southern California . . . . . [6916-07]

11:30 am: **Correlations between DTI and FLAIR images reveal the relationships of microscopic and macroscopic white matter degenerations in elderly subjects**, Wang Zhan, Yu Zhang, Peter Lorenzen, Susanne Mueller, Norbert Schuff, Michael Weiner, UCSF VA Medical Ctr. . . . . [6916-08]

11:50 am: **Gender differences in brain development in Chinese children and adolescents: a structural MRI study**, Xiaojuan Guo, Beijing Normal Univ. (China); Zhen Jin, 306th Hospital of Chinese P.L.A. (China); Kewei Chen, Banner Good Samaritan Medical Ctr.; DanLing Peng, Li Yao, Beijing Normal Univ. (China) . . . . . [6916-09]

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

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Minimally Invasive I

Session Chairs: **Ivo Wolf,** Deutsches Krebsforschungszentrum (Germany); **Guy Shechter,** Philips Research North America

10:10 am: **Registration of a needle-positioning robot to high-resolution 3D ultrasound and computed tomography for image-guided interventions in small animals**, Adam C. Waspe, James C. Lacefield, David W. Holdsworth, Aaron Fenster, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada) [6918-06]

10:30 am: **Image registration for CT and intra-operative ultrasound data of the liver**, Nils Papenberg, Univ. zu Lübeck (Germany); Thomas Lange, Charité Universitätsmedizin Berlin (Germany); Jan Modersitzki, Univ. zu Lübeck (Germany); Peter M. Schlag, Charité Universitätsmedizin Berlin (Germany); Bernd Fischer, Univ. zu Lübeck (Germany). . . . . [6918-07]

10:50 am: **Intraoperative adaptation and visualization of preoperative risk analyses for oncologic liver surgery**, Christian Hansen, MeVis Research GmbH (Germany); Stefan Schlichting, Univ. Schleswig-Holstein (Germany); Stephan Zidowitz, Alexander Köhn, Milo Hindennach, MeVis Research GmbH (Germany); Markus Kleemann, Univ. Schleswig-Holstein (Germany); Heinz-Otto Peitgen, MeVis Research GmbH (Germany). . . . . [6918-08]

11:10 am: **Adaptive visualization for needle guidance in RF liver ablation: taking organ deformation into account**, Ruxandra Lasowski, Technische Univ. München (Germany) and Siemens Computed Tomography (Germany); Selim Benhimane, Jakob Vogel, Technische Univ. München (Germany); Tobias Jakobs, Christoph J. Zech, Christoph Trumm, Ludwig-Maximilians-Univ. München (Germany); Christian Clason, Univ. Graz (Austria); Nassir Navab, Technische Univ. München (Germany) . . . . . [6918-09]

11:30 am: **Visualization tool for improved accuracy in needle placement during percutaneous radio-frequency ablation of liver tumors**, Thomas P. Stüdeli, Delft Univ. of Technology (Netherlands); Denis Kalkofen, Graz Univ. of Technology (Austria); Petter Risholm, Wajid Ali, Eigil Samset, Rikshospitalet Univ. Hospital (Norway) . . . . . [6918-10]

11:50 am: **Development of preoperative liver and vascular system segmentation and modeling tool for image-guided surgery and surgical planning**, Senhu Li, Jonathan M. Waite, Brian T. Lennon, James D. Stefansic, Pathfinder Therapeutics, Inc.; Rui Li, Benoit M. Dawant, Vanderbilt Univ. . . . . [6918-11]

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

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 2
Room: Royal Palm I-III . . .Sun. 10:10 to 11:50 am

Beamforming/Image Formation II

Session Chair: **Craig K. Abbey,** Univ. of California/Santa Barbara

10:10 am: **An ideal observer approach to beamforming**, Craig K. Abbey, Univ. of California/Santa Barbara; Nghia Nguyen, Michael F. Insana, Univ. of Illinois at Urbana-Champaign . . . . . [6920-06]

10:30 am: **Globally optimized Fourier finite-difference method for ultrasound breast imaging**, Lianjie Huang, Kenneth M. Hanson, Los Alamos National Lab.; Cuiping Li, Nebojsa Duric, Karmanos Cancer Institute; Youli Quan, Stanford Univ. . . . . [6920-07]

10:50 am: **Discrete echo signal modelling of ultrasound imaging systems**, Ming Chen, Cishen Zhang, Nanyang Technological Univ. (Singapore) . . . . . [6920-08]

11:10 am: **Clinical breast imaging using sound-speed reconstructions of ultrasound tomography data**, Cuiping Li, Nebojsa Duric, Karmanos Cancer Institute; Lianjie Huang, Los Alamos National Lab. . . . . [6920-09]

11:30 am: **Three-dimensional PSF analysis for arbitrary transducer geometries and SAFT-based image reconstruction**, Gregor F. Schwarzenberg, Hartmut Gemmeke, Nicole V. Ruiter, Forschungszentrum Karlsruhe (Germany). . . . [6920-10]

Lunch Break . . . . . 11:50 am to 1:20 pm

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Conference 6914 continued
Image Processing
Room: San Diego

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

Registration I: Applications

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

1:20 pm: **Adaptive mask and mutual information-based method for rigid intra-operative 3D ultrasound and CT image registration**, Zhijun Zhang, The Chinese Univ. of Hong Kong (Hong Kong China) . . . . . [6914-12]

1:40 pm: **Mosaicing of single-plane illumination miscroscopy images using population registration and fast content-based image fusion**, Stephan Preibisch, Max Planck Institute of Molecular Cell Biology and Genetics (Germany); Torsten Rohlfing, Michael Hasak, SRI International; Pavel Tomancak, Max Planck Institute of Molecular Cell Biology and Genetics (Germany) . . . . . [6914-13]

2:00 pm: **(ST) Ultrasound specific similarity measures for three-dimensional mosaicing**, Christian Wachinger, Nassir Navab, Technische Univ. München (Germany) . . . . . [6914-14]

2:10 pm: **(ST) Three-dimensional image registration of MR proximal femur images for the analysis of trabecular bone parameters**, Janet Blumenfeld, Univ. of California/San Francisco and UCSF-UCB Joint Graduate Group in Bioengineering; Colin Studholme, Julio Carballido-Gamio, Sharmila Majumdar, Univ. of California/San Francisco . . . . . [6914-15]

2:20 pm: **Vertebral surface registration using ridgelines/crestlines**, Sovira Tan, Jianhua Yao, Lawrence Yao, Ronald M. Summers M.D., Michael M. Ward, National Institutes of Health . . . . . [6914-16]

2:40 pm: **Bi-planar 2D-to-3D registration in Fourier domain for stereoscopic x-ray motion tracking**, Dominique Zosso, Benoît Le Callennec, Meritxell Bach Cuadra, Kamiar Aminian, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Brigitte Haeberli-Jolles, Ctr. Hospitalier Univ. Vaudois (Switzerland); Jean-Philippe Thiran, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [6914-17]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

Virtual Endoscopy I

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

1:20 pm: **Polyp height and width measurement using topographic height map**, Jianhua Yao, Suzanne Frentz, National Institutes of Health; Jiang Li, Old Dominion Univ.; Ronald M. Summers, National Institutes of Health . . . . . [6916-10]

1:40 pm: **Registration of prone and supine colons in the presence of topological changes**, Jung Wook Suh, Christopher L. Wyatt, Virginia Polytechnic Institute and State Univ. . . . . [6916-11]

2:00 pm: **Extraction of teniae coli from CT volumes for assisting virtual colonoscopy**, Yuuki Umemoto, Masahiro Oda, Takayuki Kitasaka, Kensaku Mori, Yuichiro Hayashi, Yasuhito Suenaga, Nagoya Univ. (Japan); Tetsuji Takayama, Sapporo Medical Univ. (Japan); Hiroshi Natori, Keiwakai Nishioka Hospital (Japan). . . . . [6916-12]

2:20 pm: **Efficient seeding and curvature streamline defragmentation for colonic polyp detection**, Lingxiao Zhao, Charl P. Botha, Technische Univ. Delft (Netherlands); Roel Truyen, Philips Medical Systems Nederland (Netherlands); Frits H. Post, Technische Univ. Delft (Netherlands). . . . . [6916-13]

2:40 pm: **Image-based path planning for automatic virtual colonoscopy navigation**, Wei Hong, Siemens Corporate Research . . . . . [6916-14]

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

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Image Guidance

Session Chairs: **Pierre Jannin,** Univ. de Rennes I (France); **Frank Sauer,** Siemens Corporate Research

1:20 pm: **From pre-operative cardiac modeling to intra-operative virtual environments for surgical guidance: an in vivo study**, Cristian A. Linte, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada); Marcin Wierzbicki, Grand River Regional Cancer Ctr. (Canada); John Moore, Christopher Wedlake, Robarts Research Institute (Canada); Andrew D. Wiles, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada); Daniel Bainbridge, Univ. of Western Ontario (Canada); Terry M. Peters, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada). . . . . [6918-12]

1:40 pm: **Object identification accuracy under ultrasound enhanced virtual reality for minimally invasive cardiac surgery**, Andrew D. Wiles, Cristian A. Linte, Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada); John Moore, Christopher Wedlake, Robarts Research Institute (Canada); Terry M. Peters, Univ. of Western Ontario (Canada) and Robarts Research Institute (Canada) . . . . . [6918-13]

2:00 pm: **Coregistered volumetric true 3D ultrasonography in image-guidance neurosurgery**, Songbai Ji, Dartmouth College; Alex Hartov, Dartmouth College and Norris Cotton Cancer Ctr.; Kathryn Fontaine, Dartmouth College; David Roberts M.D., Norris Cotton Cancer Ctr. and Dartmouth Hitchcock Medical Ctr.; Keith D. Paulsen, Dartmouth College and Norris Cotton Cancer Ctr. . . . . [6918-14]

2:20 pm: **Electromagnetic tracking system for minimal invasive interventions using a C-arm system with CT option: first clinical results**, Markus H. Nagel, CAS innovations AG (Germany); Martin Hoheisel, Ulrich Bill, Klaus W. Klingenbeck-Regn, Siemens Medical Solutions (Germany); Willi A. Kalender, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Ralf Petzold, CAS innovations AG (Germany) . . . . [6918-15]

2:40 pm: **3D ultrasound guidance system for needle placement procedures**, Sheng Xu, Jochen Kruecker, Philips Research North America; Anthony Kam, National Institutes of Health; Hui Jiang, Philips Medical Systems; Neil D. W.Glossop, Traxtal Technologies (Canada); Bradford J. Wood, National Institutes of Health[6918-16]

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

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

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

Keynote and Frontiers in Ultrasound

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

1:20 pm: **New developments in molecular imaging with micro-ultrasound and contrast agents (Keynote)** *(Invited Paper)*, F. Stuart Foster, Univ. of Toronto (Canada) . . . . . .[6920-12]

2:20 pm: **Implanting ultrasound devices: techniques and tips**, David H. R.Vilkomerson, Thomas Chilipka, John Bogan, DVX LLC; John Blebea M.D., Rashad Choudry M.D., John Wang, Michael Salvatore, Vittorio Rotella M.D., Krishnan Soundararajan, Temple Univ. . . . . .[6920-13]

2:40 pm: **Improvement of signal-to-noise ratio by a new high contrast imaging method combining amplitude modulation and pulse inversion techniques,** Norihide Maikusa, Tadanori Fukami, Yasutaka Tamura, Tetsuya Yuasa, Takao Akatsuka, Yamagata Univ. (Japan) . . . . . [6920-14]

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

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Conference 6914 continued
Image Processing
Room: San Diego

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

Neurological Applications
Session Chair: **James C. Gee,** Univ. of Pennsylvania

3:30 pm: **Cortical thickness measurement from magnetic resonance images using partial volume estimation**, Maria A. Zuluaga, BioMedIA Lab. (Australia) and Univ. de los Andes (Colombia); Oscar Acosta, Pierrick Bourgeat, BioMedIA Lab. (Australia); Marcela Hernández-Hoyos, Univ. de Los Andes (Colombia); Olivier Salvado, Sébastien Ourselin, BioMedIA Lab. (Australia) and Univ. College London (United Kingdom) . . . . . [6914-18]

3:50 pm: **Parallel optimization of tumor model parameters for fast registration of brain tumor images**, Evangelia I. Zacharaki, Cosmina S. Hogea, Dinggang Shen, George Biros, Christos A. Davatzikos, Univ. of Pennsylvania. . . . . [6914-19]

4:10 pm: **Spatial normalization of diffusion tensor images based on anisotropic segmentation**, Jinzhong Yang, Dinggang Shen, Chandan Misra, Xiaoying Wu, Univ. of Pennsylvania; Susan M. Resnick, National Institute on Aging; Christos A. Davatzikos, Ragini Verma, Univ. of Pennsylvania. . . . . [6914-20]

4:30 pm: **Fusion of rat brain histology and MRI using weighted multi-image mutual information**, Christoph Palm, Univ. College London (United Kingdom) and Forschungszentrum Jülich GmbH (Germany); Graeme P. Penney, King's College London (United Kingdom); William R. Crum, Julia A. Schnabel, Univ. College London (United Kingdom); Uwe Pietrzyk, Forschungszentrum Jülich GmbH (Germany) and Bergische Univ. Wuppertal (Germany); David J. Hawkes, Univ. College London (United Kingdom) . . . . . [6914-21]

4:50 pm: **Comparison of EM-based and level set partial volume segmentations of MR brain images**, Hemant D. Tagare, Yale Univ. School of Medicine; Yunmei Chen, Univ. of Florida; Robert Fulbright, Yale Univ. School of Medicine . . . . . [6914-22]

5:10 pm: **(ST) 3D MRI brain-image segmentation based on region-restricted EM algorithm**, Zhong Li, Jianping Fan, The Univ. of North Carolina at Charlotte . . . [6914-23]

5:20 pm: **(ST) Automatic segmentation of the facial nerve and chorda tympani using image registration and statistical priors,** Jack Noble, Robert Labadie M.D., Vanderbilt Univ.; Frank Warren M.D., The Univ. of Utah; J. Michael Fitzpatrick, Benoit M. Dawant, Vanderbilt Univ. . . . . [6914-24]

Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

Virtual Endoscopy II
Session Chair: **William E. Higgins,** The Pennsylvania State Univ.

3:30 pm: **Automated anatomical labeling of bronchial branches using multiple classifiers and its application to bronchoscopy guidance based on fusion of virtual and real bronchoscopy**, Shunsuke Ota, Daisuke Deguchi, Takayuki Kitasaka, Kensaku Mori, Yasuhito Suenaga, Yoshinori Hasegawa, Kazuyoshi Imaizumi, Nagoya Univ. (Japan); Hirotsugu Takabatake, Minami Sanjyo Hospital (Japan); Masaki Mori, Sapporo Kosei Hospital (Japan); Hiroshi Natori, Keiwakai Nishioka Hospital (Japan) . . . . . [6916-16]

3:50 pm: **Integrated system for planning peripheral bronchoscopic procedures**, William E. Higgins, Jason D. Gibbs, Michael W. Graham, Kun-Chang Yu, The Pennsylvania State Univ.. . . . . [6916-17]

4:10 pm: **Subject specific finite element deformation modeling from monocular endoscope videos**, Adrian J. Chung, Guang-Zhong Yang, Imperial College London (United Kingdom). . . . . [6916-18]

4:30 pm: **Virtually assisted optical colonoscopy,** Joseph Marino, Feng Qiu, Arie E. Kaufman, Stony Brook Univ. . . . . [6916-19]

SPECIAL SESSION
Golden West Room: . . . . . Sun. 5:45 to 7:00 pm

Virtual Endoscopy
Ronald M. Summers, National Institutes of Health; **William E. Higgins,** The Pennsylvania State Univ.

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WORKSHOP:
San Diego Room · Sun. 5:45 to 7:45 pm

DICOM Working Group 23 and Application Hosting: What They Mean for Research in Medical Image Analysis

Chair: **David Robert Haynor,** Univ. of Washington

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Registration and Targeting
Session Chairs: **Jay B. West,** Accuray, Inc.; **Steven L. Hartmann,** Medtronic Navigation

3:30 pm: **Maximum likelihood estimation of the distribution of target registration error**, Mehdi H. Moghari, Purang Abolmaesumi, Queen's Univ. (Canada) . . . . . [6918-17]

3:50 pm: **A system for finding a 3D target without a 3D image**, Jay B. West, Calvin R. Maurer, Jr., Accuray, Inc.. . . . . [6918-18]

4:10 pm: **Feasibility of 3D tracking of surgical tools using 2D single-plane x-ray projections**, Petar Seslija, Damiaan F. Habets, Chris Norley, Hristo N. Nikolov, Terry M. Peters, David W. Holdsworth, Robarts Research Institute (Canada) . . . . . [6918-19]

4:30 pm: **Automatic extraction of the mid-sagittal plane using an ICP variant**, Lorenz Fieten, Jörg Eschweiler, Matias de la Fuente, Helmholtz Institute for Biomedical Engineering (Germany); Sascha Gravius, Univ. Bonn (Germany); Klaus Radermacher, Helmholtz Institute for Biomedical Engineering (Germany)[6918-20]

4:50 pm: **The distribution of registration error of a fiducial marker in rigid-body point-based registration**, Ramya Balachandran, J. Michael Fitzpatrick, Vanderbilt Univ. . . . . [6918-21]

5:10 pm: **A new method of automatic landmark tagging for shape model construction via local curvature scale,** Sylvia Rueda, The Univ. of Nottingham (United Kingdom); Jayaram K. Udupa, Univ. of Pennsylvania; Li Bai, The Univ. of Nottingham (United Kingdom) . . . . . [6918-22]

WORKSHOP
California Room · Sun. 5:45 to 7:45 pm

Modeling for Therapy Guidance and Medical Imaging

Chair: **Michael I. Miga,** Vanderbilt Univ.

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

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

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

3:30 pm: **Cardiac phase detection in intravascular ultrasound images**, Monica M. S.Matsumoto, Aeronautics Institute of Technology (Brazil) and Univ. de São Paulo (Brazil); Pedro A. Lemos, Univ. de São Paulo (Brazil); Takashi Yoneyama, Aeronautics Institute of Technology (Brazil); Sérgio S. Furuie, Univ. de São Paulo (Brazil) . . . . . [6920-15]

3:50 pm: **Evaluation of a level set segmentation method for cardiac ultrasound images**, Yong Yue, Hemant D. Tagare, Yale Univ. School of Medicine . . . . . [6920-16]

4:10 pm: **Detection of artery interfaces: a real-time system and its clinical applications**, Francesco Faita, Vincenzo Gemignani, Elisabetta Bianchini, Consiglio Nazionale delle Ricerche (Italy); Chiara Giannarelli, Lorenzo Ghiadoni, Univ. di Pisa (Italy); Marcello Demi, Consiglio Nazionale delle Ricerche (Italy) and Esaote SpA (Italy) . . . . . [6920-17]

4:30 pm: **Estimation of cardiac functional parameters from contrast-enhanced echocardiography video sequences by spatio-temporal clustering**, Prashant P. Bansod, Uday B. Desai, Indian Institute of Technology (India); Nitin J. Burkule, Asian Heart Institute and Research Ctr. (India). . . . . [6920-18]

4:50 pm: **A new fringeline-tracking approach for ultrasound color Doppler imaging phase unwrapping**, Ashraf A. Saad, Univ. of Washington and Philips Medical Systems; Linda G. Shapiro, Univ. of Washington . . . . . [6920-19]

5:10 pm: **Automatic detection of blood versus non-blood regions on intravascular ultrasound (IVUS) images using wavelet packet signatures**, Amin Katouzian, Columbia Univ.; Babak Baseri, Univ. of Medicine and Denistry of New Jersey; Stephane G. Carlier, Elisa E. Konofagou, Andrew F. Laine, Columbia Univ. . . . . [6920-20]

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The following posters will be on display Sunday and Monday, 17-18 February in the Golden Pacific Ballroom. The Interactive Poster Session with authors in attendance will be Monday evening from 5:00 to 6:30 pm. Poster awards will be presented at 5:30 pm during the reception.

Conference 6914 Posters
Image Processing

Chairs: **Philippe Thévenaz,** École Polytechnique Fédérale de Lausanne (Switzerland); **Sébastien Ourselin,** CSIRO ICT Ctr. (Australia)

Classification and Pattern Recognition

A machine learning approach for body part recognition based on CT images, Keigo Nakamura, Yuanzhong Li, Wataru Ito, Kazuo Shimura, FUJIFILM Corp. (Japan) . . . . . .[6914-65]

Personal identification based on blood vessels of retinal fundus images, Keisuke Fukuta, Toshiaki Nakagawa, Gifu Univ. (Japan); Yoshinori Hayashi, TAK Co., Ltd. (Japan); Yuji Hatanaka, Gifu National College of Technology (Japan); Takeshi Hara, Hiroshi Fujita, Gifu Univ. (Japan). . . . . .[6914-66]

Efficient classifier generation and weighted voting for atlas-based segmentation: two small steps faster and closer to the Combination Oracle, Xabier Artaechevarria, Arrate Muñoz-Barrutia, Carlos Ortiz-de-Solórzano, Univ. de Navarra (Spain) . . . . . .[6914-67]

Matching of structural prototypes for content-based medical image retrieval, Benedikt Fischer, Michael Sauren, Mark O. Güld, Ilja Bezrukov, Thomas M. Deserno, RWTH Aachen (Germany) . . . . . .[6914-68]

An ANOVA-based study for liver texture invariance using co-occurrence matrices, Ruchaneewan Susomboon, Daniela S. Raicu, Jacob D. Furst, DePaul Univ.; Timothy B. Johnson M.D., Northwestern Univ. Medical School. . . . . .[6914-69]

Tissue classification using cluster features for lesion detection in digital cervigrams, Xiaolei Huang, Wei Wang, Lehigh Univ.; Zhiyun Xue, L. Rodney Long, Sameer K. Antani, National Library of Medicine; Jose Jeronimo, National Cancer Institute . . . . . .[6914-70]

Image Restoration and Enhancement

An image reconstruction method based on machine learning for dual-energy subtraction radiography, Yoshiro Kitamura, Masahiko Yamada, Wataru Ito, FUJIFILM Corp. (Japan) . . . . . .[6914-71]

Development of adaptive noise reduction filter algorithm for pediatric body images in a multidetector CT, Eiji Nishimaru, Hiroshima City Hospital (Japan); Katsuhiro Ichikawa, Kanazawa Univ. (Japan); Izumi Okita, Yuuji Ninomiya, Yukihiro Tomoshige, Takehiro Kurokawa, Yutaka Ono, Hiroshima City Hospital (Japan); Yuko Nakamura, Kure Medical Association Hospital (Japan); Masayuki Suzuki M.D., Kanazawa Univ. (Japan). . . . . .[6914-72]

Retinal vessel enhancement based on directional field, Jian Chen, Jie Tian, Institute of Automation (China) . . .[6914-74]

Fast multiscale vessel enhancement, Dong Hye Ye, Dongjin Kwon, Seoul National Univ. (South Korea); Il Dong Yun, Hankuk Univ. of Foreign Studies (South Korea); Sang Uk Lee, Seoul National Univ. (South Korea) . . . . . .[6914-75]

Adaptive kernel algorithm for FPGA-based speckle reduction, Gerhard Tech, Robert Schwann, Goetz Kappen, Michael Först, Tobias G. Noll, RWTH Aachen (Germany) . . . . . .[6914-76]

Characterizing regional lymph nodes from endoscopic ultrasound images, Ifeoma Nwogu, Vipin Chaudhary, Univ. at Buffalo/SUNY . . . . . .[6914-77]

Clinical validation and performance evaluation of enhancement methods acquired from interventional c-arm x-ray, Liyang Wei, Dinesh Kumar, Animesh Khemka, Eigen; Ram Turlapati, Univ. of Wisconsin; Jasjit S. Suri, Eigen . . .[6914-78]

Dermascopic hair disocclusion using inpainting, Paul Wighton, M. Stella Atkins, Simon Fraser Univ. (Canada); Tim K. Lee, British Columbia Cancer Research Ctr. (Canada) . . . . . .[6914-79]

Denoising of brain MRI using modified PDE based on pixel similarity, Renchao Jin, Enmin Song, Lijuan Zhang, Zhifang Min, Xiangyang Xu, Huazhong Univ. of Science and Technology (China); Chih-Cheng Huang, Southern Polytech State Univ. . . . . .[6914-80]

Pyramidal flux in an anisotropic diffusion scheme for enhancing structures in 3D images, Oscar Acosta, Hans Frimmel, Olivier Salvado, Sébastien Ourselin, BioMedIA Lab. (Australia) . . . . . .[6914-81]

Informative frame detection from wireless capsule video endoscopic images, Md. Khayrul Bashar, Kensaku Mori, Yasuhito Suenaga, Nagoya Univ. (Japan) and The Innovative Research Ctr. for Preventive Medical Engineering (Japan); Yoshito Mekada, Nagoya Univ. (Japan) and Chukyo Univ. (Japan) . . . . . .[6914-82]

Motion Analysis

Automated motion correction based on target tracking for dynamic nuclear medicine studies, Xinhua Cao, Tracy Tetrault, Fred Fahey, Ted Treves, Children's Hospital Boston. . . . . .[6914-83]

Multiobject tracking of human spermatozoa, Lauge Sørensen, Jakob Ostergaard, Copenhagen Univ. (Denmark); Niels Jørgensen M.D., Rigshospitalet (Denmark); Peter Johansen, Marleen de Bruijne, Copenhagen Univ. (Denmark) . . . . . .[6914-84]

Tracking the motion of the hyoid bone in videofluoroscopic swallowing studies, Patrick M. Kellen, Joseph M. Reinhardt, The Univ. of Iowa; Douglas van Daele, The Univ. of Iowa Hospitals and Clinics . . . .[6914-85]

MRI

Towards user-independent DTI quantification, Jan Klein, Hannes Stuke, Jan Rexilius, MeVis Research (Germany); Bram Stieltjes, Deutsches Krebsforschungszentrum (Germany); Horst K. Hahn, Heinz-Otto Peitgen, MeVis Research (Germany) . . . . . .[6914-86]

An exploration of spatial similarities in temporal noise spectra in fMRI measurements, Dirk Poot, Jan Sijbers, Univ. Antwerpen (Belgium); Arjan den Dekker, Technische Univ. Delft (Netherlands) . . . . . .[6914-87]

White matter tractographies registration using Gaussian mixture modeling, Orly Zvitia, Arnaldo Mayer, Hayit Greenspan, Tel Aviv Univ. (Israel) . . . . . .[6914-89]

Tensor distribution function, Alex D. Leow, Siwei Zhu, Univ. of California/Los Angeles . . . . . .[6914-90]

Susceptibility correction for improved tractography using high field DT-EPI, Wouter Pintjens, Visionlab (Belgium) and Bio Imaging Lab. (Belgium); Dirk Poot, Visionlab (Belgium); Marleen Verhoye, Bio Imaging Lab. (Belgium) and Visionlab (Belgium); Annemie Van der Linden, Bio Imaging Lab. (Belgium); Jan Sijbers, Visionlab (Belgium) . . . .[6914-91]

A Bayesian method with reparameterization for diffusion tensor imaging, Diwei Zhou, The Univ. of Nottingham (United Kingdom) and Collaborative Medical Image Analysis on Grid Research Group (United Kingdom); Ian L. Dryden, Li Bai, Alexey Koloydenko, The Univ. of Nottingham (United Kingdom) . . .[6914-92]

Automatic regional analysis of DTI properties in the developmental Macaque brain, Martin A. Styner, Rebecca Knickmeyer, The Univ. of North Carolina at Chapel Hill; Sarah J. Short, Christopher Coe, Univ. of Wisconsin/Madison; John H. Gilmore, The Univ. of North Carolina at Chapel Hill . . . . . .[6914-93]

Multiresolution and Wavelets

Short basis functions for constant-variance interpolation, Philippe Thévenaz, Thierry Blu, Michael Unser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[6914-94]

Efficient random access high resolution region-of-interest (ROI) image retrieval using backward coding of wavelet trees (BCWT), Enrique Corona, Texas Tech Univ.; Jiangling Guo, Beijing Institute of Technology (China); Sunanda D. Mitra, Brian Nutter, Tanja Karp, Texas Tech Univ.. . . . . .[6914-95]

Registration

Semi automatic matching of OCT and IVUS images for image fusion, Olivier Pauly, Siemens Corporate Research; Gozde B. Unal, Sabanci Univ. (Turkey); Greg Slabaugh, Siemens Corporate Research; Stephane G. Carlier, Cardiovascular Research Foundation; Tong Fang, Siemens Corporate Research . . . . . .[6914-43]

Nonlinear elastic model for image registration and soft tissue simulation based on piecewise St. Venant-Kirchhoff material approximation, Evgeny Gladilin, Roland Eils, Deutsches Krebsforschungszentrum (Germany) . . . . . .[6914-96]

Validation and comparison of registration methods for free-breathing 4D lung CT, Torbjørn Vik, Sven Kabus, Jens von Berg, Philips Research Europe Hamburg (Germany); Konstantin Ens, Philips Research Europe Hamburg (Germany) and Univ. of Luebeck (Germany); Sebastian P. M.Dries, Tobias Klinder, Cristian Lorenz, Philips Research Europe Hamburg (Germany) . . . . . .[6914-97]

Effective 2D-3D medical image registration using support vector machine, Wenyuan Qi, Lixu Gu, Shanghai Jiao Tong Univ. (China) . . . . . .[6914-98]

Nonrigid surface registration for open and closed 2D manifold in 3D Euclidian space, Sune Darkner, Martin Vester-Christensen, Danmarks Tekniske Univ. (Denmark); Rasmus R. Paulsen, Oticon A/S (Denmark); Rasmus D. Larsen, Danmarks Tekniske Univ. (Denmark) . . . . . .[6914-99]

Two-dimensional-3D registration of angiographic data with model-based methods, Sabine Mollus, Philips Research Europe Aachen (Germany); Jördis Lübke, Univ. Hospital Freiburg (Germany); Andreas Walczuch, Philips Research Labs. (Germany); Heidrun Schumann, Univ. Rostock (Germany); Jürgen Weese, Philips Research Europe Aachen (Germany) . . . . . .[6914-100]

Robust registration for change detection, Sune Darkner, Dan W. Hansen, Danmarks Tekniske Univ. (Denmark); Rasmus R. Paulsen, Oticon A/S (Denmark); Rasmus D. Larsen, Danmarks Tekniske Univ. (Denmark) . . . . . .[6914-101]

Reconstruction and registration of multispectral x-ray images for reliable alignment correction in radiation treatment devices, B. Peter Selby, MedCom GmbH (Germany) and Fraunhofer-Institut für Graphische Datenverarbeitung (Germany) and Technische Univ. München (Germany); Georgios Sakas, Fraunhofer-Institut für Graphische Datenverarbeitung (Germany); Stefan Walter, MedCom GmbH (Germany); Wolfgang D. Groch, Univ. of Applied Sciences (Germany); Uwe Stilla, Technische Univ. München (Germany). . . . . .[6914-102]

Registration of standardized histological images in feature space, Ulas Bagci, Li Bai, The Univ. of Nottingham (United Kingdom) . . . . . .[6914-103]

A new parametric nonrigid image registration work based on Helmholtz's theorem, Hsi-Yue Hsiao, Hua-Mei Chen, Ting-Hung Lin, Chih-Yao Hsieh, Mei-Yi Chu, Guojun Liao, The Univ. of Texas at Arlington; Hualiang Zhong, Virginia Commonwealth Univ. . . . . .[6914-104]

Three-dimensional statistical cancer atlas-based targeting of prostate biopsy using ultrasound image guidance, Ramkrishnan Narayanan, Eigen; Dinggang Shen, Christos A. Davatzikos, Univ. of Pennsylvania; David E. Crawford, Al Baha Barqawi, Priya Werahera, Univ. of Colorado Health Sciences Ctr.; Dinesh Kumar, Jasjit S. Suri, Eigen . . . . . .[6914-105]

Optimized GPU implementation of learning-based nonrigid multimodal registration, Zhe Fan, Stony Brook Univ.; Christoph P. Vetter, Christoph Guetter, Daphne N. Yu, Siemens Corporate Research; Rüdiger Westermann, Technische Univ. München (Germany); Arie E. Kaufman, Stony Brook Univ.; Chenyang Xu, Siemens Corporate Research . . . . .[6914-107]

Efficient 3D rigid body registration of micro-MR and micro-CT trabecular bone images, Chamith S. Rajapakse, The Univ. of Pennsylvania; Jeremy F. Magland, The Univ. of Pennsylvania Health System; Suzanne L. Wehrli, The Children's Hospital of Philadelphia; Henry Zhang, Sherry Liu, Ed Guo, Columbia Univ.; Felix W. Wehrli, The Univ. of Pennsylvania . . . . . .[6914-108]

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Evaluation of the use of multimodality skin markers for the registration of pre-procedure cardiac MR images and intra-procedure x-ray fluoroscopy images for image guided cardiac electrophysiology procedures, Kawal S. Rhode, YingLiang Ma, Angela Chandrasena, Andy P. King, King's College London (United Kingdom); Gao Gang, Phani Chinchapatnam, Univ. College London (United Kingdom); Maxime Sermesant, King's College London (United Kingdom); David J. Hawkes, Univ. College London (United Kingdom); Tobias Schaeffter, King's College London (United Kingdom); Jaswinder Gill, Guy's and St Thomas' NHS Foundation Trust (United Kingdom); Reza Razavi, King's College London (United Kingdom) . . . . . .[6918-62]

Epicardial ablation guidance using coronary arterial models and live fluoroscopic overlay registrations, Robert M. Manzke, Philips Research North America; Aravinda Thiagalingam, Massachusetts General Hospital; Babak Movassaghi, Philips Medical Systems; Andre D'Avila, Vivek Reddy, Massachusetts General Hospital; Raymond C. Chan, Philips Research North America . . . . . .[6918-63]

Four-chamber surface model from segmented cardiac MR, Arnaud Bistoquet, Oskar Skrinjar, Georgia Institute of Technology . . . . . .[6918-64]

MR-guided catheter-based excitation emission optical spectroscopy for in vivo tissue characterization, Daniel A. Herzka, Philips Research North America and National Institutes of Health; Melanie S. Kotys, National Institutes of Health; Sascha Krueger, Philips Research Europe Hamburg (Germany); Bryan J. Traughber, Julie Heroux, Ahmed M. Gharib, National Institutes of Health; Jacques Ohayon, National Institutes of Health and Institut d'Ingénierie del'Information de Santé (France); Steffen Weiss, Philips Research Europe Hamburg (Germany); Roderic I. Pettigrew, Bradford J. Wood, National Institutes of Health . . . . . .[6918-65]

Investigation of new flow modifying endovascular image-guided interventional (EIGI) techniques in patient-specific aneurysm phantoms (PSAPs) using optical imaging, Jason R. Sherman, Hussain S. Rangwala, Ciprian N. Ionita, Andreea C. Dohatcu, Joseph W. Lee, Daniel R. Bednarek, Kenneth R. Hoffmann, Stephen Rudin, Toshiba Stroke Research Ctr. and Univ. at Buffalo . . . . . .[6918-66]

Developing patient-specific anatomic models for validation of cardiac ablation guidance procedures, David R. Holmes III, Maryam Rettmann, Bruce Cameron, Jon Camp, Richard A. Robb, Mayo Clinic . . . . . .[6918-67]

Detection and characterization of lymph node on MR colorectal images, Jeong-Gyoo Kim, J. Michael Brady, Univ. of Oxford (United Kingdom). . . . . .[6918-68]

Dynamic dosimetry and edema detection in prostate brachytherapy - a complete system, Ameet K. Jain, Anton Degue, Iulian Iordachita, G. Chintalapani, Johns Hopkins Univ.; J. Blevins, E. Clif Burdette, Acoustic Medsystems, Inc.; Y. Le, E. Armour, D. Song, Johns Hopkins Univ.; Gabor Fichtinger, Queen's Univ. . .[6918-69]

Localization, Tracking, and Guidance

Comparative assessment of optical tracking systems for soft tissue navigation with fiducial needles, Lena Maier-Hein, Alfred Franz, Hans-Peter Meinzer, Ivo Wolf, Deutsches Krebsforschungszentrum (Germany) . . . . . .[6918-70]

Method for evaluating compatibility of commercial Electromagnetic (EM) catheter tracking systems with surgical and imaging tables, Christopher A. Nafis, GE Global Research; Vern Jensen, Ron von Jako M.D., GE Healthcare. . . . . .[6918-71]

Automatic needle segmentation in 3D ultrasound images using 3D improved Hough transform, Hua Zhou, Wu Qiu, Mingyue Ding, Huazhong Univ. of Science and Technology (China). . . . . .[6918-72]

Low-cost respiratory motion tracking system for PET/CT, Mohammed Z. Goryawala, Misael Del Valle, Jiali Wang, James Byrne, Florida International Univ.; Juan Franquiz, Radiological Physics of South Florida, Inc. and Baptist Hospital; Anthony J. McGoron, Florida International Univ. . . . . .[6918-73]

Effects of sensor orientation on AC electromagnetic tracking system accuracy in a CT scanner environment, Eric B. Shen, Guy Shechter, Jochen Kruecker, Douglas Stanton, Philips Research North America . . . . . .[6918-74]

Assessment of the potential for catheter heating during MR imaging, Bryant Baek, David Saloner, Gabriel Acevedo-Bolton, San Francisco VA Medical Ctr.; Randall Higashida M.D., Univ. of California/San Francisco; John Comstock, San Francisco VA Medical Ctr.; Alastair Martin, Univ. of California/San Francisco . . . . . .[6918-75]

3D transrectal ultrasound prostate biopsy using a mechanical imaging and needle-guidance system, Jeffrey S. Bax, Derek Cool, Lori Gardi, Jacques Montreuil, Elena Gil, Jeremy Bluvol, Kerry Knight, David Smith, Robarts Research Institute (Canada); Cesare Romagnoli, London Health Sciences Ctr. (Canada); Aaron Fenster, Robarts Research Institute (Canada) . . . . .[6918-76]

Phantom evaluation of an image-guided navigation system based on electromagnetic tracking and open source software, Ralph Lin, Peng Cheng, David Lindisch, Filip Banovac, Georgetown Univ.; Justin Lee, Georgetown Univ. Medical Ctr.; Kevin Cleary, Georgetown Univ. . . . . .[6918-77]

Robotically assisted ultrasound interventions, Jienan Ding, Tianjin Univ. (China) and Georgetown Univ. Medical Ctr.; Emmanuel Wilson, Georgetown Univ.; Daniel Swerdlow, Georgetown Univ. Medical Ctr.; Shuxin Wang, Tianjin Univ. (China); Craig R. Carignan, Jonathan Tang, Georgetown Univ.; Kevin Cleary, Georgetown Univ. Medical Ctr. . . .[6918-78]

Intraoperative identification of tip position of bronchoscope using 3D CT images and fluoroscope images, Hideaki Haneishi, Daisuke Tamashima, Hidemi Suzuki, Yasuo Sekine, Chiba Univ. (Japan) . . . . . .[6918-79]

Point-cloud-to-point-cloud technique on tool calibration for dental implant surgical path tracking, Auranuch Lorsakul, Jackrit Suthakorn, Mahidol Univ. (Thailand); Chanjira Sinthanayothin, Advanced Dental Technology Ctr. (Thailand) . . . . . .[6918-80]

A real-time ultrasound calibration system with automatic accuracy control and incorporation of ultrasound beam thickness, Thomas K. Chen, Adrian Thurston, Mehdi H. Moghari, Randy E. Ellis, Purang Abolmaesumi, Queen's Univ. (Canada) . . . . . .[6918-81]

A buyer's guide to electromagnetic tracking systems for clinical applications, Emmanuel Wilson, Ziv R. Yaniv, Georgetown Univ.; Eric Anderson, Filip Banovac, Georgetown Univ. Medical Ctr.; Kevin Cleary, Georgetown Univ. . .[6918-82]

Visual servoing of a laser ablation based cochleostomy, Lueder A. Kahrs, Jörg Raczkowsky, Univ. Karlsruhe (Germany); Martin Werner, Ctr. of Advanced European Studies and Research (Germany); Felix B. Knapp, Univ. Hospital Duesseldorf (Germany); Markus Mehrwald, Univ. Karlsruhe (Germany); Peter Hering, Ctr. of Advanced European Studies and Research (Germany); Heinz Wörn, Univ. Karlsruhe (Germany); Jörg Schipper, Thomas Klenzner, Univ. Hospital Duesseldorf (Germany) . . . . . .[6918-83]

Modeling

Real-time deformable modeling using global mass-spring medial structure and local finite elements with double-float GPU acceleration, Pengfei Huang, Lixu Gu, Jingsi Zhang, Hongshan Zhou, Dingming He, Xiao Yu, Jiasi Song, Zhennan Yan, Sizhe Lv, Jie Liu, Shanghai Jiao Tong Univ. (China) . . . . . .[6918-84]

Virtual surgery planning for breast reconstruction using mass-spring deformable modeling and centerline bending, Weitao Chen, Lixu Gu, Pengfei Huang, Yanfeng Jin, Hua Xu, Jiasheng Dong, Shanghai Jiao Tong Univ. (China) . . . . . .[6918-85]

Finite element model for nonrigid motion analysis and its application in temporal registration of breast images, Yan Qiu, Univ. of South Florida . . . . . .[6918-86]

Modeling the influence of the VV delay for CRT on the electrical activation patterns in absence of conduction through the AV node, Daniel A. Romero, Rafael Sebastián, Univ. Pompeu Fabra (Spain); Gernot Plank, Johns Hopkins Univ.; Edward Vigmond, Univ. of Calgary (Canada); Alejandro Frangi, Univ. Pompeu Fabra (Spain) . . . . .[6918-87]

Mutual-information-corrected tumor displacement using intraoperative ultrasound for brain shift compensation in image-guided neurosurgery, Songbai Ji, Dartmouth College; Alex Hartov, Dartmouth College and Norton Cotton Cancer Ctr.; David Roberts M.D., Norton Cotton Cancer Ctr. and Dartmouth Hitchcock Medical Ctr.; Keith D. Paulsen, Dartmouth College and Norton Cotton Cancer Ctr. . . . . .[6918-88]

Simulation of tomosynthesis images based on an anthropomorphic software breast tissue phantom, Nicole V. Ruiter, Forschungszentrum Karlsruhe (Germany) and Univ. of Pennsylvania; Cuiping Zhang, The Univ. of Pennsylvania Health System and Delaware State Univ.; Predrag R. Bakic, Ann-Katherine G. Carton, Johnny Kuo, Andrew D. A.Maidment, Univ. of Pennsylvania . . . . . .[6918-89]

Interactive modeling and simulation of peripheral nerve cords, Sebastian Ullrich, Astrid Schütz, Wei Liao, Thomas M. Deserno, RWTH Aachen (Germany); Alexandre Ntouba M.D., Rolf Rossaint M.D., Andreas Prescher M.D., Univ. Hospital Aachen (Germany); Torsten Kuhlen, RWTH Aachen (Germany) . . . . . .[6918-90]

A fast stereo matching algorithm for 3D reconstruction of internal organs in laparoscopic surgery, Yoshimichi Okada, Takeshi Koishi, Suguru Ushiki, Toshiya Nakaguchi, Norimichi Tsumura, Yoichi Miyake, Chiba Univ. (Japan) . . . . .[6918-91]

Preliminary investigation of the inhibitory effects of mechanical stress in tumor growth, Ishita Garg, Michael I. Miga, Vanderbilt Univ. . . . . .[6918-92]

MITK-based segmentation of co-registered MR data for patient-specific regional anesthesia simulation, Christian Teich, Wei Liao, Sebastian Ullrich, Torsten Kuhlen, RWTH Aachen (Germany); Alexandre Ntouba M.D., Rolf Rossaint M.D., Univ. Hospital Aachen (Germany); Marcus Ullisch, Forschungszentrum Jülich GmbH (Germany); Thomas M. Deserno, RWTH Aachen (Germany) . . . . . .[6918-93]

Dynamic lung tumor phantom coupled with chest motion, Misael del Valle, Mohammed Z. Goryawala, Anthony J. McGoron, Florida International Univ. . . . . .[6918-94]

Segmentation and Registration

Atlas-based segmentation of deep brain structures using non-rigid registration, Muhammad F. Khan, Georgia Institute of Technology; Klaus Mewes, Robert E. Gross, Emory Univ.; Oskar Skrinjar, Georgia Institute of Technology . . . . . .[6918-95]

Automatic initialization for 3D bone registration, Pezhman Foroughi, Russell H. Taylor, Johns Hopkins Univ.; Gabor Fichtinger, Queen's Univ. . . . . .[6918-96]

Accurate and reproducible semi-automatic liver segmentation using haptic interaction, Erik Vidholm, Milan Golubovic, Sven Nilsson, Ingela Nyström, Uppsala Univ. (Sweden) . . . . . .[6918-97]

Continuous endoscopic guidance via interleaved video tracking and image-video registration, William E. Higgins, Lav Rai, The Pennsylvania State Univ..[6918-98]

Advanced 2D-3D registration for endovascular aortic interventions: addressing dissimilarity in images, Stefanie Demirci, Technische Univ. München (Germany); Oliver Kutter, Technische Univ. München (Germany) and Cardiovascular Surgery Department, TUM - Deutsches Herzzentrum München (Germany); Frode Manstad-Hulaas M.D., St. Olavs Hospital (Norway); Robert Bauernschmitt M.D., Deutsches Herzzentrum München (Germany); Nassir Navab, Technische Univ. München (Germany) . . . . . .[6918-99]

Location constraint based 2D-3D registration of fluoroscopic images and CT volumes for image-guided EP procedures, Rui Liao, Siemens Corporate Research; Ning Xu, Vanderbilt Univ.; Yiyong Sun, Siemens Corporate Research. . . . . .[6918-100]

Left atrium segmentation for atrial fibrillation ablation, Rashed Karim, Raad Mohiaddin, Daniel Rueckert, Imperial College London (United Kingdom) . . . . . .[6918-102]

Left atrium segmentation for planning atrial fibrillation ablation, Rashed Karim, Imperial College London (United Kingdom); Raad Mohiaddin, National Heart and Lung Institute (United Kingdom); Daniel Rueckert, Imperial College London (United Kingdom) . . . . . .[6918-103]

A hybrid method for reliable registration of digitally reconstructed radiographs and kV x-ray images for image-guided radiation therapy for prostate cancer, Yulin Song, Memorial Sloan-Kettering Cancer Ctr.; Xiaolei Huang, Lehigh Univ. . . . . .[6918-104]

Visualization

Efficient fiber clustering using parameterized polynomials, Jan Klein, Hannes Stuke, MeVis Research (Germany); Bram Stieltjes, German Cancer Research Ctr. (Germany); Olaf Konrad, Horst K. Hahn, Heinz-Otto Peitgen, MeVis Research (Germany) . . . . . .[6918-105]

Memory-efficient 3D multiresolution image enhancement and processing, Rob Albers, Technische Univ. Eindhoven (Netherlands); Eric Suijs, Philips Medical Systems Nederland (Netherlands); Peter H. N.de With, Technische Univ. Eindhoven (Netherlands) . . . . . .[6918-106]

Interactive tissue separation and visualization with dual-energy data on the GPU, Fernando Vega-Higuera, Bernhard Krauss, Siemens Medical Solutions (Germany) . . . . . .[6918-107]

Fast, high-quality volume visualization for 3D medical imaging, Alan D. Kalvin, Akimbo Technologies; Andrew F. Laine, Ting Song, Columbia Univ. . . . . .[6918-108]

Gaussian weighted projection for visualization of cardiac calcification, Xiang Chen, Case Western Reserve Univ. and Xi'an Jiaotong Univ. (China); Robert C. Gilkeson M.D., Univ. Hospitals Case Medical Ctr. and Case Western Reserve Univ.; Baowei Fei, Case Western Reserve Univ. and Univ. Hospitals of Cleveland. . . . . .[6918-109]

Interactive multi-modality display environment with photographic overlay enhancement for epilepsy surgical planning, An Wang, The Univ. of Western Ontario (Canada); Seyed Mirsattari, London Health Sciences Ctr. (Canada); David G. Gobbi, Atamai, Inc. (Canada); Frank Bihari, London Health Sciences Ctr. (Canada); Piali Das, Atamai, Inc. (Canada); Qi Zhang, The Univ. of Western Ontario (Canada); Terry Peters, Robarts Research Institute (Canada) . . . . . .[6918-110]

The architecture and performance of CAVASS, George J. Grevera, St. Joseph's Univ.; Jayaram K. Udupa, Dewey Odhner, Ying Zhuge, Andre Souza, Univ. of Pennsylvania . . . . . .[6918-111]

High-quality anatomical structure enhancement for cardiac image dynamic volume rendering, Qi Zhang, Roy A. Eagleson, Gerard Guiraudon, Terry M. Peters, Robarts Research Institute (Canada) . . . . . .[6918-112]

A new visualization method for 3D head MRA data, Satoshi Ohashi, Masahiko Hatanaka, Muroran Institute of Technology (Japan). . . . . .[6918-113]

Multispectral image enhancement for H&E stained pathological tissue specimens, Pinky A. Bautista, Tokiya Abe, Masahiro Yamaguchi, Nagaaki Ohyama, Tokyo Institute of Technology (Japan); Yukako Yagi, Cleveland Univ. (Japan). . . . . .[6918-114]

Conference 6920 Posters

Ultrasonic Imaging and Signal Processing

Development of whole breast ultrasound scanner and viewer for mass screening, Daisuke Fukuoka, Gifu Univ. (Japan); Etsuo Takada M.D., Dokkyo Medical Univ. (Japan); Yuji Ikedo, Gifu Univ. (Japan); Kiyotaka Umaki, Aloka Co., Ltd. (Japan); Takeshi Hara, Hiroshi Fujita, Gifu Univ. (Japan); Tokiko Endo M.D., Nagoya National Hospital (Japan); Takako Morita, Chunichi Hospital (Japan). . . . . .[6920-39]

Software implementation of ultrasound beamforming using ADSP-TS201 DSPs, Hak-Yeol Sohn, Sinhyeok Seo, Jaemin Kim, Tai-Kyong Song, Sogang Univ. (South Korea) . . . . . .[6920-40]

High throughput SAFT for an experimental USCT system as MatLab implementation with use of SIMD CPU instructions, Michael Zapf, Gregor F. Schwarzenberg, Nicole V. Ruiter, Forschungszentrum Karlsruhe (Germany) . . . . . .[6920-41]

A method to design an optimum pair of transmit and receive periodic sparse arrays, Giduck Kim, Tai-Kyong Song, Sogang Univ. (South Korea) . . . . .[6920-42]

Photoacoustic 3D visualization of tumor angiogenesis, Gerbert A. ten Brinke, R. G. M.Kolkman, K. K. Thumma, Univ. Twente (Netherlands); R. I. Siphanto, J. W. Van Neck, Univ. Medisch Ctr. Rotterdam (Netherlands); Ton G. van Leeuwen, W. Steenbergen, Cornelis H. Slump, Univ. Twente (Netherlands) . . . . . .[6920-45]

Imaging of acoustic attenuation and speed of sound maps using photoacoustic measurements, Rene G. H.Willemink, Srirang Manohar, Univ. Twente (Netherlands); Yashasvi Purwar, Indian Institute of Technology Madras (India); Cornelis H. Slump, Ferdi van der Heijden, Ton G. van Leeuwen, Univ. Twente (Netherlands) . . . . . .[6920-46]

A study of 3-way image fusion for characterizing acoustic properties of breast tissue, Yang Xu, Nebojsa Duric, Cuiping Li, Jessica Lupinacci, Steven Schmidt, Carri Glide-Hurst, Karmanos Cancer Institute . . . . . .[6920-48]

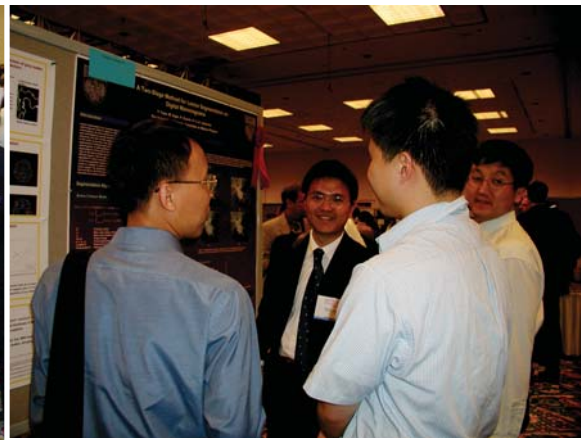
Comparison of ultrasound attenuation tomography techniques for breast cancer diagnosis, Cuiping Li, Nebojsa Duric, Karmanos Cancer Institute; Lianjie Huang, Los Alamos National Lab. . . . . .[6920-49]

Simulation of microbubble response to ambient pressure changes, Klaus S. Andersen, Jørgen A. Jensen, Danmarks Tekniske Univ. (Denmark) . . . . . .[6920-51]

Harmonic quadrature demodulation for extracting the envelope of the 2nd harmonic component, Sang-Min Kim, Jae-Hee Song, Tai-Kyong Song, Sogang Univ. (South Korea). . . . . .[6920-52]

Measurement of thermally-ablated lesions in sonoelastographic images using level set methods, Benjamin Castaneda, Univ. of Rochester; Jose G. Tamez-Pena, VirtualScopics, Inc.; Man Zhang, Kenneth Hoyt, John Strang, Deborah Rubens, Kevin Parker, Univ. of Rochester . . . . . .[6920-53]

Don't miss the Poster Awards during Poster Receptions



Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

Keynote and Small Animal Imaging

Chairs: **Jiang Hsieh,** GE Healthcare; **Ehsan Samei,** Duke Univ.

8:00 am: **Small animal imaging: why we do it, how we do it, and what it tells us (Keynote)** *(Invited Paper, Presentation Only)*, Bruce H. Hasegawa, Univ. of California/San Francisco . . . . . [6913-01]

9:00 am: **Utility of a prototype liposomal contrast agent for x-ray imaging of breast cancer: a proof of concept using micro-CT in small animals**, Cristian T. Badea, Ehsan Samei, Ketankumar Ghaghada, Robert S. Saunders, Hong Yuan, Yi Qi, Laurence W. Hedlund, G. Allan Johnson, Srinivasan Mukundan, Duke Univ. Medical Ctr. . . . . .[6913-02]

9:20 am: **Respiratory-gated micro-CT of free breathing mice using a carbon nanotube based micro-focus field emission x-ray source**, Guohua Cao, Yueh Z. Lee, Lei An, Ramya Rajaram, Xiomara Calderon, The Univ. of North Carolina at Chapel Hill; David S. Lalush, North Carolina State Univ.; Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill . . . . . .[6913-03]

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

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Conference 6914 continued
Image Processing
Room: San Diego

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

Classification and Pattern Recognition

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

8:00 am: **Feature selection and classification of multiparametric medical images using bagging and SVM**, Yong Fan, Univ. of Pennsylvania; Susan M. Resnick, National Institute on Aging; Christos A. Davatzikos, Univ. of Pennsylvania . . . . . .[6914-25]

8:20 am: **Bleeding detection in wireless capsule endoscopy using adaptive color histogram model and support vector classification**, Michal W. Mackiewicz, Mark Fisher, Univ. of East Anglia Norwich (United Kingdom); Crawford Jamieson, Norfolk and Norwich Univ. Hospital (United Kingdom). . [6914-26]

8:40 am: **Statistical modeling and MAP estimation for body fat quantification with MRI ratio imaging**, Wilbur C. K.Wong, David H. Johnson, David L. Wilson, Case Western Reserve Univ. . . . . .[6914-27]

9:00 am: **A variational method for automatic localization of the most pathological ROI in the knee cartilage**, Arish A. Qazi, IT Univ. of Copenhagen (Denmark); Erik B. Dam, Nordic Bioscience A/S (Denmark); Marco Loog, Mads Nielsen, IT Univ. of Copenhagen (Denmark); Francois B. Lauze, Nordic Bioscience A/S (Denmark); Claus Christiansen M.D., Ctr. for Clinical and Basic Research (Denmark). . .[6914-28]

9:20 am: **Motion blur detection in radiographs**, Hui Luo, William Sehnerta, Jacquelyn Ellinwood, David H. Foos, Carestream Health, Inc.; Bruce Reiner M.D., Eliot L. Siegel M.D., Univ. of Maryland Medical Ctr. . . . . .[6914-29]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

Modeling

Session Chair: **Juan Raul Cebral,** George Mason Univ.

8:00 am: **Image-based investigation of hemodynamics and rupture of cerebral aneurysms of a single morphological type: terminal aneurysms**, Marcelo Castro, George Mason Univ.; Christopher Putman, Inova Fairfax Hospital; Alessandro Radaelli, Alejandro Frangi, Univ. Pompeu Fabra (Spain); Juan R. Cebral, George Mason Univ. . . . . .[6916-20]

8:20 am: **Image-based biomechanical modeling of aortic wall stress and vessel deformation: response to pulsatile arterial pressure simulations**, Dilana Hazer, Univ. Hospital Heidelberg (Germany) and Univ. Karlsruhe (Germany); Miriam Bauer, Roland Unterhinninghofen, Rüdiger Dillmann, Univ. Karlsruhe (Germany); Goetz-Martin Richter, Univ. Hospital Heidelberg (Germany) . . . . . .[6916-21]

8:40 am: **A new deconvolution approach to perfusion imaging exploiting spatial correlation**, Burkay B. Orten, W. Clem Karl, Boston Univ.; Dushant V. Sahani, Homer H. Pien, Massachusetts General Hospital . . . . . .[6916-22]

9:00 am: **Modeling respiratory lung motion: a biophysical approach using finite element methods**, Rene Werner, Jan Ehrhardt, Rainer Schmidt, Heinz Handels, Univ. Medical Ctr. Hamburg-Eppendorf (Germany) . . . . . .[6916-23]

9:20 am: **Compensated Tikhonov regularization for quantitative perfusion measurements**, Behzad Ebrahimi, Timothy E. Chupp, Univ. of Michigan . . . . .[6916-24]

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

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Cardiac Planning and Guidance

Session Chairs: **David R. Holmes,** Mayo Clinic; **David Robert Haynor,** Univ. of Washington

8:00 am: **Ultrasound calibration using intensity-based image registration: for application in cardiac catheterization procedures**, YingLiang Ma, Kawal Rhode, King's College London (United Kingdom); Gao Gang, Univ. College London (United Kingdom); Andy P. King, King's College London (United Kingdom); Phani Chinchapatnam, Univ. College London (United Kingdom); Tobias Schaeffter, King's College London (United Kingdom); David J. Hawkes, Univ. College London (United Kingdom); Reza Razavi, Graeme P. Penney, King's College London (United Kingdom) . . . . . .[6918-23]

8:20 am: **Augmented reality image guidance for minimally invasive**, Michael Figl, Daniel Rueckert, Imperial College London (United Kingdom); David J. Hawkes, King's College London (United Kingdom) . . . . . .[6918-24]

8:40 am: **Image-based mass-spring model of mitral valve closure for surgical planning**, Peter E. Hammer, Children's Hospital Boston and Tufts Univ.; Douglas P. Perrin, Pedro J. Del Nido M.D., Children's Hospital Boston; Robert D. Howe, Harvard Univ. . . . . .[6918-25]

9:00 am: **Image-based physiological monitoring of cardiac function**, Corinna S. Maier, Siemens Corporate Research and Deutsches Krebsforschungszentrum (Germany); Michael Bock, Wolfhard Semmler, Deutsches Krebsforschungszentrum (Germany); Christine H. Lorenz, Siemens Corporate Research . . . . . .[6918-26]

9:20 am: **Enhanced cardio vascular image analysis by combined representation of results from dynamic MRI and anatomic CTA**, Caroline Kuehnel, Anja Hennemuth, MeVis Research GmbH (Germany); Steffen Oeltze, Otto-von-Guericke-Univ. Magdeburg (Germany); Tobias Boskamp, Heinz-Otto Peitgen, MeVis Research GmbH (Germany) . . . . . .[6918-27]

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

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

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

Image Processing

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

8:00 am: **Adaptive spatial compounding for improving ultrasound images of the epidural space on human subjects**, Denis Tran, Robert N. Rohling, Allaudin A. Kamani, The Univ. of British Columbia (Canada); Vickie Lessoway, BC Women's Hospital and Health Ctr. (Canada); King-Wei Hor, The Univ. of British Columbia (Canada)[6920-21]

8:20 am: **Measuring shape complexity of breast tumors on ultrasound images**, Yang Wei, Shanghai Jiao Tong Univ. (China) . . . . . .[6920-22]

8:40 am: **Image-based method for in-vivo freehand ultrasound calibration**, Wolfgang Wein, Ali Khamene, Siemens Corporate Research . . . . . .[6920-23]

9:00 am: **Spatial compounding for rotating linear probe in the presence of parameter error using image registration**, Myoung H. Choi, Kangwon National Univ. (South Korea); Moo-Ho Bae, Hallym Univ. (South Korea). . . . . .[6920-25]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

Innovative Imaging
Session Chair: **Aldo Badano,** U.S. Food and Drug Administration

10:10 am: **HYPR: constrained reconstruction for enhanced SNR in dynamic medical imaging**, Charles A. Mistretta, Andrew Alexander, Walter F. Block, Bradley Christian, Guang-Hong Chen, Sean Fain, Tim Hall, James Holmes, Kevin Johnson, Steve Kecskemeti, Lauren Keith, Frank Korosec, Univ. of Wisconsin/Madison; Robert A. Kruger, OptoSonics, Inc.; Jee Eun Lee, Kitty Moran, Univ. of Wisconsin/Madison; Orhan Nalcioglu, Univ. of California/Irvine; Rafael O'Halloran, Howard A. Rowley, Alexei A. Samsonov, Michael A. Speidel, Mark P. Supanich, Patrick Turski, Orhan Unal, Michael VanLysel, Julia V. Velikina, Oliver Wieben, Yan Wu, Yijing Wu, Jim Zagzebski, Univ. of Wisconsin/Madison . . . . . .[6913-04]

10:30 am: **Technical feasibility of breast cancer screening using ultrasound propagation velocity**, Kayan Ma, Aaron Fenster, Robarts Research Institute (Canada) and The Univ. of Western Ontario (Canada) . . . . . .[6913-05]

10:50 am: **Experimental proof of an idea for a CT-scanner with dose reduction potential**, Hugo de las Heras, Oleg Tischenko, Forschungszentrum für Umwelt und Gesundheit, GmbH (Germany); Bernhard C. Renger, Technische Univ. München (Germany); Yuan Xu, Univ. of Oregon; Christoph Hoeschen, Forschungszentrum für Umwelt und Gesundheit, GmbH (Germany) . . . . . .[6913-06]

11:10 am: **Imaging with multiprism x-ray lenses**, Erik Fredenberg, Björn Cederström, Kungliga Tekniska Högskolan (Sweden); Magnus C. Aslund, Sectra AB (Sweden); Peter Nillius, Kungliga Tekniska Högskolan (Sweden); Mats V. Lundqvist, Sectra AB (Sweden); Mats E. Danielsson, Kungliga Tekniska Högskolan (Sweden) . . . . .[6913-07]

11:30 am: **GEANT4 simulation of NSECT for detection of iron overload in the liver**, Anuj J. Kapadia, Brian P. Harrawood, Georgia D. Tourassi, Duke Univ. Medical Ctr.. . .[6913-08]

11:50 am: **Electronic portal imaging using Cherenkov radiation**, Isuru Silva, Geordi Pang, Univ. of Toronto (Canada). . . .[6913-09]

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

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Conference 6914 continued
Image Processing
Room: San Diego

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

Registration II: Methodology
Session Chair: **Frederik Maes,** Katholieke Univ. Leuven (Belgium)

10:10 am: **Hybrid physics-based elastic image registration using approximating splines**, Stefan Wörz, Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany).[6914-30]

10:30 am: **On the development of a new nonrigid image registration using deformation-based grid generation**, Chih-Yao Hsieh, Hua-Mei Chen, Ting-Hung Lin, Hsi-Yue Hsiao, Mei-Yi Chu, Guojun Liao, The Univ. of Texas at Arlington; Hualiang Zhong, Virginia Commonwealth Univ. . . . . .[6914-31]

10:50 am: **A novel framework for multimodal intensity-based similarity measures based on internal similarity**, Graeme P. Penney, King's College London (United Kingdom); Lewis D. Griffin, Univ. College London (United Kingdom); Andy P. King, King's College London (United Kingdom); David J. Hawkes, Univ. College London (United Kingdom) . . . . . .[6914-32]

11:10 am: **Volume preserving image registration via a post-processing stage**, Reinhard Hameeteman, Jifke F. Veenland, Wiro J. Niessen, Univ. Medisch Ctr. Rotterdam (Netherlands) . . . . . .[6914-33]

11:30 am: **Improved CT and MR image registration with the introduction of a dual-modality contrast agent: performance assessment using quantitative and information theoretic methods**, Jeremy D. P.Hoisak, Jinzi Zheng, Christine J. Allen, Univ. of Toronto (Canada); David A. Jaffray, Princess Margaret Hospital (Canada) . . . . . .[6914-34]

11:50 am: **Conditional statistical model building**, Mads F. Hansen, Michael S. Hansen, Rasmus D. Larsen, Danmarks Tekniske Univ. (Denmark) . . . . . .[6914-35]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

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

10:10 am: **Endovascular image-guided treatment of in-vivo model aneurysms with asymmetric vascular stents (AVS): evaluation with time-density curve angiographic analysis and histology**, Andreea C. Dohatcu, Ciprian N. Ionita, Daniel R. Bednarek, Kenneth R. Hoffmann, Stephen Rudin, Toshiba Stroke Research Ctr.. . . . . .[6916-25]

10:30 am: **3D analysis of microvascular architecture of the spleen with ultra-high-resolution for partial splenic embolization**, Hideharu Honda, Saitama Univ. (Japan) and The Institute of Physical and Chemical Research (RIKEN) (Japan); Kenji Shimizu, The Univ. of Tokyo (Japan) and The Institute of Physical and Chemical Research (RIKEN) (Japan); Jun Koizumi, Tokai Univ. (Japan); Ryutaro Himeno, The Institute of Physical and Chemical Research (RIKEN) (Japan); Taketoshi Mishima, Saitama Univ. (Japan) and The Institute of Physical and Chemical Research (RIKEN) (Japan). . . . . .[6916-26]

10:50 am: **Segmentation of stentgrafts in the abdominal aorta from ECG-gated CTA data**, Almar Klein, Univ. Twente (Netherlands); Willem K. J.Renema, Luuk J. Oostveen, Leo J. Schultze Kool M.D., Radboud Univ. Nijmegen Medical Ctr. (Netherlands); Cornelis H. Slump, Univ. Twente (Netherlands) . . . . . .[6916-27]

11:10 am: **Analysis of anatomic variability in children with low mathematical skills**, Zhaoying Han, Vanderbilt Univ. and Institute of Imaging Science; Lynn Funchs, Nikki Davis, Christopher J. Cannistraci, Adam W. Anderson, John C. Gore, Benoit M. Dawant, Vanderbilt Univ. . . . . .[6916-28]

11:30 am: **Computer-aided segmentation and 3D analysis of in vivo MRI examinations of the human vocal tract during phonation**, Axel Wismueller, Johannes Behrends, Univ. of Rochester; Phil Hoole, Gerda Leinsinger, Ludwig-Maximilians-Univ. München (Germany); Anke Meyer-Baese, Florida State Univ.; Maximilian Reiser, Ludwig-Maximilians-Univ. München (Germany). . . . . .[6916-29]

Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Keynote and Modeling
Chair: **Michael I. Miga,** Vanderbilt Univ.

10:10 am: **Robo-surgeon: combining medical imaging and mechanical models to automate surgery (Keynote)** *(Invited Paper)*, Robert D. Howe, Harvard Univ.. . . . . [6918-28]

11:10 am: **Biomechanical modelling for breast image registration**, Angela W. C.Lee, Vijayaraghavan Rajagopal, Jae-Hoon Chung, Poul M. F.Nielsen, Martyn Nash, The Univ. of Auckland (New Zealand) . . . . . .[6918-29]

11:30 am: **Development of an anthropomorphic breast software phantom based on region growing algorithm**, Cuiping Zhang, Predrag R. Bakic, Andrew D. A.Maidment, The Univ. of Pennsylvania Health System. . . . .[6918-30]

11:50 am: **A deformation model for non-rigid registration in image-guided kidney surgery**, Rowena Ong, S. D. Herrell III, Michael I. Miga, Robert L. Galloway, Jr., Vanderbilt Univ. . . . . .[6918-31]

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

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11:50 am: **Segmentation of multispectral bladder MR images with inhomogeneity correction for virtual cystoscopy**, Lihong Li, College of Staten Island/CUNY; Su Wang, Hongyu Lu, Stony Brook Univ.; Xinzhou Wei, City College/CUNY; Mark Wagshul, Marlene Zawin, Zhengrong Liang, Stony Brook Univ. . . . . .[6916-30]

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

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

SESSION 6
Room: Royal Palm I-III . . . . . Mon. 10:10 to 11:50 am

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

10:10 am: **Temperature monitoring during tissue freezing using ultrasound speed measurements**, Ivana Jovanovic, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Peter Littrup, Nebojsa Duric, Olsi Rama, Karmanos Cancer Institute; Luciano Sbaiz, Martin Vetterli, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . .[6920-26]

10:30 am: **Lamb waves detection in bovine cortical tibia using scanning laser vibrometry**, Manik Hapsara, Daciana D. Illiescu, Univ. of Warwick (United Kingdom) . . . . . .[6920-27]

10:50 am: **Detection and characterization of breast masses with ultrasound tomography: clinical results**, Nebojsa Duric, Cuiping Li, Peter Littrup, Karmanos Cancer Institute; Lianjie Huang, Los Alamos National Lab.; Carri Glide-Hurst, Olsi Rama, Lisa Bey-Knight R.N., Steven Schmidt, Yang Xu, Jessica Lupinacci, Karmanos Cancer Institute . . . . . .[6920-28]

11:10 am: **A novel software-based technique for quantifying placental calcifications and infarctions from ultrasound**, John T. Ryan, Univ. College Dublin (Ireland); Fionnuala McAuliffe M.D., Mary Higgins M.D., National Maternity Hospital (Ireland); Marie Stanton, Patrick C. Brennan, Univ. College Dublin (Ireland) . . . . . .[6920-29]

11:30 am: **A novel ultrasonic method for measuring breast density and breast cancer risk**, Carri Glide-Hurst, Nebojsa Duric, Peter Littrup, Karmanos Cancer Institute and Wayne State Univ. . .[6920-30]

Lunch Break . . . . . .11:50 am to 1:20 pm

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

Optical and MR Imaging

Session Chair: **Mats E. Danielsson,** Royal Institute of Technology (Sweden)

1:20 pm: **Photon migration simulator for fluorescence tomography**, Carlos Pardo-Martin, Thomas Pengo, Arrate Muñoz-Barrutia, Carlos Ortiz-de-Solórzano, Univ. de Navarra (Spain). . . . . .[6913-10]

1:40 pm: **Computationally efficient perturbative forward modeling for 3D multispectral bioluminescence and fluorescence tomography**, Joyita Dutta, Sangtae Ahn, Univ. of Southern California; Changqing Li, Abhijit J. Chaudhari, Simon R. Cherry, Univ. of California/Davis; Richard M. Leahy, Univ. of Southern California . . . . . .[6913-11]

2:00 pm: **3D multispectral light propagation model for subcutaneous vein imaging**, Vincent C. Paquit, Jeffery R. Price, Oak Ridge National Lab.; Fabrice Mériaudeau, Univ. de Bourgogne (France); Kenneth W. Tobin, Jr., Oak Ridge National Lab. . . . . .[6913-12]

2:20 pm: **Image reconstruction from sparse data samples accounting for variable phase in magnetic resonance imaging**, Samuel J. LaRoque, Emil Y. Sidky, Xiaochuan M. Pan, The Univ. of Chicago . . . . . .[6913-13]

2:40 pm: **A fixed point method for homotopic L0-minimization with application to MR image recovery**, Joshua D. Trzasko, Armando Manduca, Mayo Clinic College of Medicine. . . . . .[6913-14]

3:00 pm: **Retrospective breathing motion compensation for MRI with continuously moving table**, Matthias Honal, Simon Bauer, Sandra Huff, Univ. Hospital Freiburg (Germany); Stephan Kannengiesser, Siemens Medical Solutions (Germany); Jochen Leupold, Ute Ludwig, Univ. Hospital Freiburg (Germany) . . . . . .[6913-15]

3:20 pm: **Statistical properties of spin noise in MRI**, Tianhu Lei, Hee Kwon Song, Felix W. Wehrli, Univ. of Pennsylvania . . . . . .[6913-16]

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

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Conference 6914 continued
Image Processing
Room: San Diego

SESSION 7
Room: San Diego . . . . . Mon. 1:20 to 3:50 pm

Cardiovascular Applications

Session Chair: **Andreas Wahle,** The Univ. of Iowa

1:20 pm: **Nonrigid registration of carotid ultrasound and MR images using a 'twisting and bending' model**, Nuwan D. Nanayakkara, Bernard Chiu, Robarts Research Institute (Canada); Abbas Samani, The Univ. of Western Ontario (Canada); J. David Spence, Grace Parraga, Robarts Research Institute (Canada); Jagath Samarabandu, The Univ. of Western Ontario (Canada); Aaron Fenster, Robarts Research Institute (Canada) . . . . . .[6914-36]

1:40 pm: **Deformable registration of 3D vessel structures to a single projection image**, Darko Zikic, Martin Groher, Technische Univ. München (Germany); Ali Khamene, Siemens Corporate Research; Nassir Navab, Technische Univ. München (Germany) . . . . . .[6914-37]

2:00 pm: **3D inter-subject cardiac registration using 4D information**, Alfredo López, Software Competence Ctr. Hagenberg (Austria); Karl Fritscher, Univ. für Gesundheitswissenschaften, Medizinische Informatik und Technik (Austria); Thomas Trieb, Innsbruck Medical Univ. (Austria); Rainer Schubert M.D., Univ. für Gesundheitswissenschaften, Medizinische Informatik und Technik (Austria); Julian Mattes, Software Competence Ctr. Hagenberg (Austria). . . . . .[6914-38]

2:20 pm: **Level set segmentation of the heart from 4D phase contrast MRI**, Dagmar Kainmueller, Univ. Karlsruhe (Germany) and Zuse Institute Berlin (Germany); Roland Unterhinninghofen, Univ. Karlsruhe (Germany); Sebastian Ley, Germany Cancer Research Ctr. (Germany); Rüdiger Dillmann, Univ. Karlsruhe (Germany) . . . . . .[6914-39]

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Golden West

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

MRI Other

Session Chair: **John B. Weaver,** Dartmouth College

1:20 pm: **Modelling the pelvic floor for investigating difficulties during childbirth**, Xinshan Li, Jennifer Kruger, Jae-Hoon Chung, Martyn Nash, Poul M. F.Nielsen, The Univ. of Auckland (New Zealand) . .[6916-32]

1:40 pm: **Estimating MR relaxation in a single shot: considerations for estimation accuracy**, Donald B. Twieg, The Univ. of Alabama at Birmingham; Stanley J. Reeves, Auburn Univ. . . . . .[6916-33]

2:00 pm: **Three-dimensional reconstruction of the moving mitral valve annulus and mitral valve leaflets from multislice 2D magnetic resonance images acquired using a balanced steady-state free precession imaging pulse sequence**, Smita Sampath, June H. Kim, Robert J. Lederman, Elliot R. McVeigh, National Institutes of Health . . . . .[6916-34]

2:20 pm: **Imaging magnetic nanoparticles using the signal's frequency spectrum**, John B. Weaver, Adam M. Rauwerdink, B. S. Trembly, Charles R. Sullivan, Ian Baker D.D.S., Dartmouth College . . . . .[6916-35]

2:40 pm: **Fast 3D fluid registration of brain magnetic resonance images**, Natasha Lepore, Yi-Yu Chou, Univ. of California/Los Angeles; Oscar L. Lopez, Howard J. Aizenstein, James T. Becker, Univ. of Pittsburgh; Arthur W. Toga, Paul M. Thompson, Univ. of California/Los Angeles . . . . . .[6916-36]

3:00 pm: **MRI-based noninvasive measurement of intracranial compliance from the relationship between transcranial blood and CSF flows: modeling vs direct approach,** Noam Alperin, Rongwen Tain, Univ. of Illinois at Chicago . . . . . .[6916-37]

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

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Minimally Invasive II

Session Chairs: **Robert L. Galloway,** Vanderbilt Univ.; **Wolfgang Birkfellner,** Medizinische Univ. Wien (Austria)

1:20 pm: **Recognition of risk situations based on endoscopic instrument tracking and knowledge-based situation modeling**, Stefanie Speidel, Gunther Sudra, Julien Senemaud, Maximilian Drentschew, Univ. Karlsruhe (Germany); Beat Peter Müller-Stich, Carsten Gutt, Heidelberg School of Medicine (Germany); Rüdiger Dillmann, Univ. Karlsruhe (Germany) . . . . . .[6918-32]

1:40 pm: **Three-dimensional bronchial simulator: automatic generation of volumetric CT images for assessment of bronchial parameter quantification methods**, Amaury Saragaglia, Catalin Fetita, Françoise Prêteux, Institut National des Télécommunications (France); Philippe A. Grenier, Pitié-Salpêtrière Hospital (France) . . . . . .[6918-33]

2:00 pm: **Visual enhancement of facial tissue in endoscopy**, Thomas Stehle, Alexander Behrens, RWTH Aachen (Germany); Matthias Bolz, Olympus Winter and IBE GmbH (Germany); Til Aach, RWTH Aachen (Germany). . . . . .[6918-34]

2:20 pm: **A navigation system using projection images of laparoscopic instruments and a surgical target with improved image quality**, Takeshi Koishi, Suguru Ushiki, Toshiya Nakaguchi, Hideki Hayashi, Norimichi Tsumura, Yoichi Miyake, Chiba Univ. (Japan) . . . . . .[6918-35]

2:40 pm: **An evaluation environment for respiratory motion compensation in navigated bronchoscopy**, Ingmar Wegner, Ralf Tetzlaff, Deutsches Krebsforschungszentrum (Germany); Juergen Biederer, Univ. Schleswig-Holstein (Germany); Ivo Wolf, Hans-Peter Meinzer, Deutsches Krebsforschungszentrum (Germany) . . . . . .[6918-36]

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

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

Elastography

Session Chair: **David H. R. Vilkomerson,** DVX LLC

1:20 pm: **Estimation of 3D cardiac deformation using spatio-temporal elastic registration of non-scanconverted ultrasound data**, An M. Elen, Dirk Loeckx, Hon-Fai Choi, Hang Gao, Piet Claus, Frederik Maes, Paul Suetens, Jan D'hooge, Katholieke Univ. Leuven (Belgium) [6920-31]

1:40 pm: **Real-time visualization of pulsatile tissue-motion in B-mode ultrasonogram for assistance in bedside diagnosis of ischemic diseases of neonatal cranium**, Masayuki Fukuzawa, Masayoshi Yamada, Nobuyuki Nakamori, Kyoto Institute of Technology (Japan); Yoshiki Kitsunezuka, Saiseikai Hyogo-ken Hospital (Japan). . . . . .[6920-32]

2:00 pm: **Quantitative Shear Modulus Imaging Using Spatially Modulated Acoustic Radiation Force**, Stephen A. McAleavey, Manoj G. Menon, Etana Elegbe, Univ. of Rochester. . . . . .[6920-33]

2:20 pm: **Image-based speckle tracking for tissue motion characterization in a deformable cardiovascular phantom**, Raymond C. Chan, Sandeep M. Dalal, Robert M. Manzke, Douglas Stanton, Philips Research North America; Peter Chang, Scott Settlemier, Ivan Salgo, Philips Medical Systems; Francois C. Tournoux, Massachusetts General Hospital .[6920-34]

2:40 pm: **Improving diagnostic quality of IVUS palpography By incorporating catheter motion compensation**, Mikhail G. Danilouchkine, Frits Mastik, Antonius F. W.van der Steen, Erasmus Medical Ctr. (Netherlands) . . . . . .[6920-35]

3:00 pm: **Strain index: a new visualizing parameter for ultrasound elastography**, Dario Sosa-Cabrera, Univ. de Las Palmas de Gran Canaria (Spain); Rodrigo de Luis-Garcia, Carlos Alberola-López, Univ. de Valladolid (Spain); Juan Ruiz-Alzola, Instituto Tecnológico de Canarias, S.A. (Spain) . . . . . .[6920-36]

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Conference 6914 continued
Image Processing
Room: San Diego

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

Cardiovascular Applications

2:40 pm: **Segmentation of myocardial perfusion MR sequences with multiband active appearance models driven by spatial and temporal features**, Nora Baka, Julien Milles, Leids Univ. Medisch Ctr. (Netherlands); Emile A. Hendriks, Technische Univ. Delft (Netherlands); Avan Suinesiaputra, Leids Univ. Medisch Ctr. (Netherlands); Michael Jerosch Herold, Oregon Health & Science Univ.; Johan H. C.Reiber, Leids Univ. Medisch Ctr. (Netherlands); Boudewijn P. F.Lelieveldt, Leids Univ. Medisch Ctr. (Netherlands) and Technische Univ. Delft (Netherlands) . . . . . [6914-40]

3:00 pm: **Four-chamber heart modeling and automatic segmentation for 3D cardiac CT volumes**, Yefeng Zheng, Bogdan Georgescu, Adrian Barbu, Siemens Corporate Research; Michael Scheuering, Siemens Medical Solutions (Germany); Dorin Comaniciu, Siemens Corporate Research . . . . . [6914-41]

3:20 pm: **(ST) Segmentation of the heart and major vascular structures in cardiovascular CT images**, Jochen Peters, Olivier Ecabert, Philips Research Europe Aachen (Germany); Cristian Lorenz, Jens von Berg, Philips Research Europe Hamburg (Germany); Matthew J. Walker, Mani Vembar, Mark E. Olszewski, Philips Medical Systems; Jürgen Weese, Philips Research Europe Aachen (Germany) . . . . . [6914-42]

3:30 pm: **(ST) AdaBoost classification for model-based segmentation of the outer wall of the common carotid artery in CTA,** Danijela Vukadinovic, Theo van Walsum, Rashindra Manniesing, Aad van der Lugt, Thomas T. de Weert, Wiro J. Niessen, Univ. Medisch Ctr. Rotterdam (Netherlands) . . . . . [6914-135]

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

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Minimally Invasive II

3:00 pm: **Robust distortion correction of endoscope system**, Wenjing Li, Sixiang Nie, Marcelo Soto-Thompson, STI Medical Systems; Yoursif I. A-Rahim, Univ. of Hawai'i . . . . . [6918-37]

3:20 pm: **Method for radiometric calibration of an endoscope's camera and light source**, William E. Higgins, Lav Rai, The Pennsylvania State Univ.[6918-38]

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

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Conference 6920 continued
Ultrasonic Imaging and Signal Processing
Room: Royal Palm I-III

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

Elastography

3:20 pm: **A new approach to elastography using a modified demons registration algorithm,** Dario Sosa-Cabrera, Univ. de Las Palmas de Gran Canaria (Spain); Antonio Tristan-Vega, Univ. de Valladolid (Spain); Javier Gonzalez-Fernandez, Univ. de Las Palmas de Gran Canaria (Spain); Gonzalo V. Sánchez-Ferrero, Univ. de Valladolid (Spain); Luis Gomez-Deniz, Univ. de Las Palmas de Gran Canaria (Spain); Carlos Alberola-Lopez, Univ. de Valladolid (Spain); Juan Ruiz-Alzola, Instituto Tecnológico de Canarias, S.A. (Spain) . . . . . [6920-37]

Best Student Paper Award and Plenary Presentation

Monday 18 February · 4:00 to 5:00 pm

Chairs: **Milan Sonka,** The Univ. of Iowa;
Armando Manduca, Mayo Clinic College of Medicine

Michael B. Merickel Student Paper Award

Plenary Presentation: **Challenges and Opportunities of Ultra-High Field MRI and MRS** by Prof. John Gore of Vanderbilt Univ.

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

X-ray Detectors I

Chair: **Michael Overdick,** Philips Research Labs. (Germany)

8:00 am: **Exploration of the potential performance of polycrystalline silicon-based active matrix flat panel imagers incorporating active pixel sensor architectures**, Larry E. Antonuk, Youcef El-Mohri, Hong Du, Mahdokht Behravan, Taeyjuana Curry, Qihua Zhao, Martin Koniczek, Univ. of Michigan; Robert A. Street, JengPing Lu, Palo Alto Research Ctr., Inc. . . . . .[6913-17]

8:20 am: **New advances in the development of solid state photomultipliers for medical imaging**, Edward E. Godik, Joseph Krutov, Eugene Levin, Krishna R. Linga, Eugene Shelegeda, V. E. Shubin, Constantin Sitarsky, Amplification Technologies, Inc. . .[6913-18]

8:40 am: **The solid-state x-ray image intensifier (SSXII): an EMCCD-based x-ray detector**, Andrew T. Kuhls-Gilcrist, Girijesh K. Yadava, Vikas Patel, Amit Jain, Daniel R. Bednarek, Stephen Rudin, Univ. at Buffalo . . . . . .[6913-19]

9:00 am: **Parameter investigation and first results from a digital x-ray flat panel detector with forward bias capability**, Jared D. Starman, Stanford Univ.; Carlo A. Tognina, Gary F. Virshup, Josh Star-Lack, Ivan Mollov, Varian Medical Systems, Inc.; Rebecca A. Fahrig, Stanford Univ. [6913-20]

9:20 am: **An indirect flat-panel detector with avalanche gain for low dose x-ray imaging: SAPHIRE (scintillator avalanche photoconductor with high resolution emitter readout)**, Wei Zhao, State Univ. of New York at Stony Brook Hospital; Dan Li, State Univ. of New York at Stony Brook; Norifumi Egami, Masakazu Nanba, Yuuki Honda, Misao Kubota, Kenkichi Tanioka, Japan Broadcasting Corp. (Japan); John A. Rowlands, Sunnybrook and Women's Health Sciences Ctr. (Canada); Katsuhiko Suzuki, Hamamatsu Photonics K.K. (Japan) . . . . . .[6913-21]

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

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Conference 6914 continued
Image Processing
Room: San Diego

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

Image Restoration and Enhancement

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

8:00 am: **Image intensity standardization in 3D rotational angiography and its application to vascular segmentation**, Hrvoje Bogunovic, Alessandro Radaelli, Mathieu S. De Craene, David Delgado, Alejandro Frangi, Univ. Pompeu Fabra (Spain) . . . . . .[6914-44]

8:20 am: **Fast bias field estimation by localized Lloyd-Max quantization**, Rudolf Hanel, Medizinische Univ. Wien (Austria); Kees Joost Batenburg, Jan Sijbers, Univ. Antwerpen (Belgium) . . . . . .[6914-45]

8:40 am: **Feature-preserving artifacts removal from dermoscopy images**, Howard Zhou, Georgia Institute of Technology; Mei Chen, Richard Gass, Intel Research Lab. Pittsburgh; James M. Rehg, Georgia Institute of Technology; Laura Ferris, Jonhan Ho, Laura M. Drogowski, Univ. of Pittsburgh Medical Ctr. . .[6914-46]

9:00 am: **A quantitative performance measure for the clinical evaluation of comb structure removal algorithms for flexible endoscopy**, Stephan Rupp, Fraunhofer Institute for Integrated Circuits IIS (Germany) . . . . . .[6914-47]

9:20 am: **Adaptive algorithms for digital mammogram enhancement**, Renbin Peng, Pramod K. Varshney, Hao Chen, Syracuse Univ.; James H. Michels, JHM Technologies, LLC. . . . . .[6914-48]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

Keynote and Methodology

Chairs: **Maryellen L. Giger,** The Univ. of Chicago; **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

8:00 am: **Clinical relevance of computer-aided diagnosis and visualization (Keynote)** *(Invited Paper)*, Heinz-Otto Peitgen, MeVis Research GmbH (Germany) and Florida Atlantic Univ.. . . . . [6915-12]

9:00 am: **Feature selection for computer-aided detection: comparing different selection criteria**, Rianne Hupse, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands). . . . . .[6915-13]

9:20 am: **Hybrid linear classifier for jointly normal data: theory**, Weijie Chen, U.S. Food and Drug Administration; Charles E. Metz, Maryellen L. Giger, The Univ. of Chicago . . . . . .[6915-14]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Royal Palm I-III

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

Pulmonary/Lung

Session Chair: **Eric A. Hoffman,** The Univ. of Iowa Hospitals and Clinics

8:00 am: **Serial volumetric registration of pulmonary CT studies**, Jose S. Silva, Univ. de Coimbra (Portugal); Augusto M. Silva, Beatriz Sousa Santos, Univ. de Aveiro (Portugal) . . . . . .[6916-38]

8:20 am: **Pulmonary artery segmentation and quantification in sickle cell associated pulmonary hypertension**, Marius G. Linguraru, Nisha Mukherjee, Robert L. Van Uitert, Ronald M. Summers, Roberto F. Machado, Bradford J. Wood, Mark T. Gladwin, National Institutes of Health . . . . . .[6916-39]

8:40 am: **Active contour approach for accurate quantitative airway analysis**, Benjamin L. Odry, Atilla P. Kiraly, Greg Slabaugh, Carol L. Novak, Siemens Corporate Research; David P. Naidich, New York Univ.; Jean-Francois Lerallut, Univ. of Compiegne (France) . . . . . .[6916-40]

9:00 am: **Processing and analysis of CT images for diffuse lung disease in the lung tissue research consortium**, Ronald A. Karwoski, Brian J. Bartholmai M.D., David R. Holmes III, Vanessa A. Zavaletta, Mayo Clinic; Richard A. Robb, Mayo Clinic College of Medicine. . . . . .[6916-41]

9:20 am: **The influence of reconstruction algorithm on the measurement of airway dimensions using computed tomography**, Jonathan C. Wong, James Hogg iCapture Ctr. (Canada); Yasutaka Nakano, Shiga Univ. of Medical Science (Japan) and James Hogg iCapture Ctr. (Canada); Harvey O. Coxson, Nestor L. Müller, Vancouver General Hospital (Canada); Peter D. Paré, James C. Hogg, James Hogg iCapture Ctr. (Canada) . . . . . .[6916-42]

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

6916 continues on page 25

Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Deformation/Motion Measurement

Chairs: **William E. Higgins,** The Pennsylvania State Univ.; **Yeong Gil Shin,** Seoul National Univ. (South Korea)

8:00 am: **Evaluation of motion compensation approaches for soft tissue navigation**, Jochen Kruecker, Sheng Xu, Philips Research North America; Neil D. W.Glossop, Traxtal Technologies (Canada); William F. Pritchard, U.S. Food and Drug Administration; Bradford J. Wood, National Institutes of Health . . . . . .[6918-39]

8:20 am: **Real-time respiratory motion tracking: roadmap correction for hepatic artery catheterizations**, Selen C. Atasoy, Martin Groher, Darko Zikic, Ben Glocker, Technische Univ. München (Germany); Tobias Waggershauser, Ludwig-Maximilians-Univ. München (Germany); Marcus Pfister, Siemens Medical Solutions (Germany); Nassir Navab, Technische Univ. München (Germany) . . . . . .[6918-40]

8:40 am: **A technique for respiratory motion correction in image-guided cardiac catheterization procedures**, Andy P. King, King's College London (UK) and University College London (UK); Redha Boubertakh, Ka Lun Ng, Ying-Liang Ma, King's College London (UK); Phani Chinchapatnam, Gao Gang, Univ. College London (UK); Tobias Schaeffter, King's College London (UK); David J. Hawkes, Univ. College London (UK); Reza Razavi, Kawal S. Rhode, King's College London (UK) .[6918-41]

9:00 am: **Respiratory signal generation for retrospective gating of cone-beam CT images**, Stefan Wiesner, Technische Univ. München (Germany); Ziv R. Yaniv, Georgetown Univ. . . . . .[6918-42]

9:20 am: **Preoperative brain shift: case studies**, Omar El Ganaoui, Institut de Recherche en Informatique et Systèmes Aléatoires (France) and Univ. de Rennes I (France); Xavier Morandi, Univ. de Rennes I (France) and Institut de Recherche en Informatique et Systèmes Aléatoires (France); Simon Duchesne, Univ. Laval Robert-Giffard (Canada) and Institut de Recherche en Informatique et Systèmes Aléatoires (France); Pierre Jannin, Institut de Recherche en Informatique et Systèmes Aléatoires (France) and Univ. de Rennes I (France) . . . .[6918-43]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 5
Room: Town & Country. . . . Tues. 10:10 am to 12:10 pm

X-ray Detectors II
Chair: **Bruce R. Whiting,** Washington Univ. in St. Louis

10:10 am: **Detective quantum efficiency of an energy resolving photon counting detector**, John E. Tkaczyk, Samit Basu, Daniel B. McDevitt, Wen Li, Yanfeng Du, GE Global Research . . . . . .[6913-22]

10:30 am: **An efficient depth- and energy-dependent Monte Carlo model for columnar CsI detector**, Iacovos S. Kyprianou, U.S. Food and Drug Administration; Gabriel Brackman, Marquette Univ.; Andreu Badal, Univ. Politécnica de Cataluña (Spain); Kyle J. Myers, Aldo Badano, U.S. Food and Drug Administration .[6913-23]

10:50 am: **CIX: a detector for spectrally enhanced x-ray imaging by simultaneous counting and integrating**, Hans Krüger, Johannes Fink, Manuel Koch, Edgar Kraft, Norbert Wermes, Univ. Bonn (Germany); Peter Fischer, Ivan Peric, Univ. Mannheim (Germany); Christoph Herrmann, Michael Overdick, Walter Rütten, Philips Research Europe Aachen (Germany) . . . . . .[6913-24]

11:10 am: **Characterization of the new co-doped CsI microcolumnar films for high-speed radiographic imaging**, Samta C. Thacker, Valeriy B. Gaysinskiy, Elena Ovechkina, Stuart R. Miller, Vivek V. Nagarkar, Radiation Monitoring Devices, Inc. . .[6913-25]

11:30 am: **Recent developments in scintillating fiber detection systems in radiation therapy**, Sam Beddar, Louis Archambault, Tina M. Briere, The Univ. of Texas M.D. Anderson Cancer Ctr.; Frederic Lacroix, Ctr. Hospitalier Univ. de Montreal (Canada); Luc Gingras, Hotel Dieu De Quebec (Canada); Luc Beaulieu, Univ. Laval (Canada) and Hotel Dieu de Quebec (Canada) . . . . . .[6913-26]

11:50 am: **Photon counting readout pixel array in 0.18-µm CMOS technology for on-line gamma-ray imaging of 103-palladium seeds for permanent breast seed implant (PBSI) brachytherapy**, Amir H. Goldan, Karim S. Karim, Univ. of Waterloo (Canada); Alla Reznik, Curtis B. Caldwell, John A. Rowlands, Sunnybrook Health Sciences Ctr. (Canada) . . .[6913-27]

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

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Conference 6914 continued
Image Processing
Room: San Diego

SESSION 9
Room: San Diego Tues. 10:10 am to 12:10 pm

Keynote and Liver Applications
Chair: **Kensaku Mori,** Nagoya Univ. (Japan)

10:10 am: **Model-based biomedical image analysis (Keynote)** *(Invited Paper)*, James S. Duncan, Yale Univ.. . . . . [6914-49]

11:10 am: **Adaptive directional region growing segmentation of the hepatic vasculature**, Qingyang Shang, Benoit M. Dawant, Vanderbilt Univ.. . . . . .[6914-50]

11:30 am: **Quantitative growth measurement of lesions in hepatic interval CT exams**, Saradwata Sarkar, Ramkrishnan Narayanan, Hyunjin Park, Bing Ma, Peyton H. Bland, Charles R. Meyer, Univ. of Michigan Health System .[6914-51]

11:50 am: **Liver segmentation combining Gabor filtering and traditional vector field snake**, Aaron M. Mintz, Carnegie Mellon Univ.; Daniela S. Raicu, Jacob D. Furst, DePaul Univ. . . . . .[6914-52]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

Breast Tomosynthesis
Session Chair: **Heang-Ping Chan,** Univ. of Michigan

10:10 am: **Computer-aided detection of breast masses in tomosynthesis reconstructed volumes using information-theoretic principles**, Swatee Singh, Georgia D. Tourassi, Amarpreet S. Chawla, Robert S. Saunders, Ehsan Samei, Joseph Y. Lo, Duke Univ. . . . . .[6915-06]

10:30 am: **Digital tomosynthesis mammography: comparison of mass classification using 3D slices and 2D projection views**, Heang-Ping Chan, Yi-Ta Wu, Berkman Sahiner, Yiheng Zhang, Jun Wei, Univ. of Michigan; Richard H. Moore, Daniel B. Kopans, Massachusetts General Hospital; Mark A. Helvie, Lubomir M. Hadjiiski, Ted W. Way, Univ. of Michigan . . . . . .[6915-07]

10:50 am: **Assessment of applying a CAD scheme to detect microcalcification clusters on digital breast tomosynthesis images**, Sang Cheol Park, Bin Zheng, Xiao-Hui Wang, David Gur, Univ. of Pittsburgh . . . . . .[6915-08]

11:10 am: **Classification of breast masses and normal tissues in digital tomosynthesis mammography**, Jun Wei, Heang-ping Chan, Yiheng Zhang, Berkman Sahiner, Chuan Zhou, Jun Ge, Yi-ta Wu, Lubomir M. Hadjiiski, Univ. of Michigan. . . . . .[6915-09]

11:30 am: **Masses classification using fuzzy active contours and fuzzy decision trees**, Giovanni J. J.Palma, GE Healthcare France (France) and Ecole Nationale Supérieure des Télécommunications (France); Gero Peters, Ecole Nationale Supérieure des Télécommunications (France) and GE Healthcare France (France); Serge L. Muller, GE Healthcare France (France); Isabelle Bloch, Ecole Nationale Supérieure des Télécommunications (France) .[6915-10]

11:50 am: **Texture in digital breast tomosynthesis: a comparison between mammographic and tomographic characterization of parenchymal properties**, Despina Kontos, Predrag R. Bakic, Andrew D. A.Maidment, The Univ. of Pennsylvania Health System . . . . .[6915-11]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Royal Palm I-III

SESSION 9
Room: Royal Palm I-III . . . . . .Tues. 10:10 to 11:50 am

Bone/Other
Chair: **Felix W. Wehrli,** Univ. of Pennsylvania

10:10 am: **Hip fracture risk estimation based on bone mineral density of a biomechanically-guided region of interest: a preliminary study**, Wenjun Li, John Kornak, Caixia Li, Alain Koyama, Isra Saeed, Ying Lu, Thomas Lang, Univ. of California/San Francisco . . . . . .[6916-43]

10:30 am: **Determination of the local strains involved in microdamage formation in a three-point bending test of single trabeculae**, Philipp J. Thurner, Univ. of Southampton (United Kingdom) and Univ. of California/Santa Barbara; Raymond Tang, Rensselaer Polytechnic Institute; Ralf Jungmann, Univ. of California/Santa Barbara; Deepak Vashishth, Rensselaer Polytechnic Institute; Paul K. Hansma, Univ. of California/Santa Barbara. . . . . .[6916-44]

10:50 am: **Improved 3D skeletonization of trabecular bone images derived from in vivo MRI**, Jeremy F. Magland, Felix W. Wehrli, The Univ. of Pennsylvania Health System . . . . . .[6916-45]

11:10 am: **Synchrotron radiation micro- and nano-CT methods for 3D quantitative assessment of mechanical relevant ultrastructural properties in murine bone**, Philipp Schneider, Romain Voide, ETH Zürich (Switzerland); Marco Stampanoni, Paul Scherrer Institut (Switzerland); Ralph Müller, ETH Zürich (Switzerland) . .[6916-46]

11:30 am: **High resolution x-ray imaging of dynamic solute transport in cyclically deformed porous tissue scaffolds**, Jorn Op Den Buijs, Kee-Won Lee, Steven M. Jorgensen, Erik L. Ritman M.D., Shanfeng Wang, Michael J. Yaszemski, Mayo Clinic College of Medicine. . . . . .[6916-47]

Lunch Break . . . . . .11:50 am to 1:20 pm

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Radiation Therapy
Chairs: **Baowei Fei,** Case Western Reserve Univ.; **Terry M. Peters,** Robarts Research Institute (Canada)

10:10 am: **Incorporating electromagnetic tracking into respiratory correlated imaging for high precision radiation therapy**, Ryan L. Smith, Kristen Lechleiter, Kathleen Malinowski, Parag Parikh M.D., Washington Univ. in St. Louis . . .[6918-44]

10:30 am: **Fiducial movement in lung CT images after CyberKnife stereotactic radiosurgery**, Konrad L. Strulik, Georgetown Univ. and Institute for Robotics and Cognitive Systems, University of Luebeck (Germany); Min H. Cho, Brian T. Collins, Noureen Khan, Filip Banovac, Kevin R. Cleary, Georgetown Univ.. . . . .[6918-45]

10:50 am: **Visualizing anatomic changes over multi-day radiotherapy treatments**, Derek Merck, Stephen Pizer, Julian G. Rosenman, The Univ. of North Carolina at Chapel Hill . . . . . .[6918-46]

11:10 am: **Radiation therapy simulation and planning with magnetic resonance images**, Thomas Boettger, Siemens Medical Solutions (Germany); Tufve Nyholm, Umeå Univ. (Sweden); Chandrasekhar Nunna, Siemens Medical Solutions (Germany); Mikael Karlsson, Umeå Univ. (Sweden); Juan C. Celi, Siemens Medical Solutions, Inc. . . . . .[6918-47]

11:30 am: **Phase impact factor: a novel parameter for determining optimal CT phase in 4D radiation therapy treatment planning for mobile lung cancer**, Yulin Song, Memorial Sloan-Kettering Cancer Ctr.; Yan Song, Univ. of Houston; Xiaolei Huang, Lehigh Univ. . . . . .[6918-48]

11:50 am: **Efficient framework for deformable 2D-3D registration**, Oliver Fluck, Siemens Corporate Research and Otto-von-Guericke-Univ. (Germany); Aharon Shmuel, Ali Khamene, Siemens Corporate Research . . . . . .[6918-49]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 6
Room: Town & Country. Tues. 1:20 to 3:00 pm

Performance Assessment and Phantoms
Chair: **Hee-Joung Kim,**
Yonsei Univ. (South Korea)

1:20 pm: **Towards a full-reference, information-theoretic quality assessment method for x-ray images**, Chrysi Papalazarou, Technische Univ. Eindhoven (Netherlands); Rudolph M. Snoeren, Philips Medical Systems Nederland (Netherlands); Frans M. J.Willems, Peter H. N.de With, Technische Univ. Eindhoven (Netherlands); Han Kroon, Peter M. J.Rongen, Philips Medical Systems Nederland (Netherlands) . . . . . .[6913-28]

1:40 pm: **Generalized objective performance assessment of a new high-sensitivity microangiographic fluoroscopic (HSMAF) imaging system**, Girijesh K. Yadava, Stephen Rudin, Andrew T. Kuhls-Gilcrist, Daniel R. Bednarek, Univ. at Buffalo . . . . . .[6913-29]

2:00 pm: **Physical characterization of digital radiological images by use of transmitted information metric**, Eri Matsuyama, Du-Yih Tsai, Yongbum Lee, Masaru Sekiya, Niigata Univ. (Japan); Katsuyuki Kojima, Hamamatsu Univ. (Japan). . . . . .[6913-30]

2:20 pm: **A perfusion phantom for quantitative medical imaging**, Behzad Ebrahimi, Scott D. Swanson, Bobak Mosadegh, Timothy E. Chupp, Univ. of Michigan . . . . . .[6913-31]

2:40 pm: **Voxel models representing the male and female ICRP reference adult: a dosimetric tool for medical imaging**, Maria A. Zankl, Helmut Schlattl, Janine Becker, Nina Petoussi-Henss, Christoph Hoeschen, Forschungszentrum für Umwelt und Gesundheit, GmbH (Germany)[6913-32]

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

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Conference 6914 continued
Image Processing
Room: San Diego

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

Pulmonary Applications
Chair: **Kyongtae Ty Bae,**
Univ. of Pittsburgh

1:20 pm: **Lung lobe modeling and segmentation with individualized surface meshes**, Thomas Blaffert, Hans Barschdorf, Jens von Berg, Sebastian P. M.Dries, Astrid Franz, Tobias Klinder, Cristian Lorenz, Steffen Renisch, Rafael Wiemker, Philips Research Europe Hamburg (Germany) . . . . . .[6914-53]

1:40 pm: **Robust system for human airway-tree segmentation**, William E. Higgins, Michael W. Graham, Jason D. Gibbs, The Pennsylvania State Univ. . . . . .[6914-54]

2:00 pm: **Voxel classification-based airway tree segmentation**, Pechin Lo, Copenhagen Univ. (Denmark); Marleen de Bruijne, Copenhagen Univ. (Denmark) and Univ. Medisch Ctr. Rotterdam (Netherlands) . . . . . .[6914-55]

2:20 pm: **4D CT image-based lung motion field extraction and analysis**, Tobias Klinder, Univ. Hannover (Germany) and Philips Research Europe Hamburg (Germany); Cristian Lorenz, Jens von Berg, Steffen Renisch, Thomas Blaffert, Philips Research Europe Hamburg (Germany); Jörn Ostermann, Univ. Hannover (Germany). . . . . .[6914-56]

2:40 pm: **The evaluation of a highly automated mixture model based technique for PET tumor volume segmentation**, Michalis Aristophanous, Charles A. Pelizzari, The Univ. of Chicago . . . . . .[6914-57]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

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

1:20 pm: **Automated matching of supine and prone colonic polyps based on PCA and SVMs**, Shijun Wang, Robert L. Van Uitert, Ronald M. Summers M.D., National Institutes of Health . . . . . .[6915-01]

1:40 pm: **DMLLE: a large-scale dimensionality reduction method for detection of polyps in CT colonography**, Shijun Wang, Jianhua Yao, Ronald M. Summers M.D., National Institutes of Health . . . . . .[6915-02]

2:00 pm: **Mosaic decomposition method for detection and removal of inhomogeneously tagged regions in electronic cleansing for CT colonography**, Wenli Cai, Micheal Zalis M.D., Hiroyuki Yoshida, Massachusetts General Hospital . . . . . .[6915-03]

2:20 pm: **Simultaneous feature selection and classification based on genetic algorithms: an application to colonic polyp detection**, Yalin Zheng, Xiaoyun Yang, Musib M. Siddique, Gareth R. Beddoe, Medicsight PLC (United Kingdom) . . . . . .[6915-04]

2:40 pm: **A CAD scheme incorporating massive-training ANNs for detection of polyps in false-negative CT colonography cases in a large multicenter clinical trial: preliminary results**, Kenji Suzuki, Ivan Sheu, The Univ. of Chicago; Mark L. Epstein, Univ. of Chicago; Ryan Kohlbrenner, The Univ. of Chicago; Antonella Lostumbo, Univ. of Illinois at Chicago; Don C. Rockey, The Univ. of Texas Southwestern Medical Ctr. at Dallas; Abraham H. Dachman M.D., The Univ. of Chicago . . . . . .[6915-05]

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

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Royal Palm I-III

SESSION 10
Room: Royal Palm I-III . Tues. 1:40 to 3:00 pm

Breast and Other
Chair: **Anne V. Clough,**
Marquette Univ.

1:40 pm: **Combination of model-free and model-based analysis of dynamic contrast enhanced MRI for breast cancer diagnosis**, Erez Eyal, Edna Furman-Haran, Daria Badikhi, Weizmann Institute of Science (Israel); Frederick Kelcz M.D., Univ. of Wisconsin/Madison; Hadassa Degani, Weizmann Institute of Science (Israel) . . . . . .[6916-48]

2:00 pm: **An iterative hyperelastic behavior reconstruction for breast cancer assessment**, Abbas Samani, Hatef Mehrabian, The Univ. of Western Ontario (Canada) . . . . . .[6916-49]

2:20 pm: **Parametric dynamic F-18-FDG PET/CT breast imaging**, Alphonso W. Magri, Syracuse Univ.; Andrzej Krol, David Feiglin, Upstate Medical Univ./SUNY; Edward D. Lipson, James Mandel, Syracuse Univ.; Wendy McGraw, Central New York PET, LLC; Wei Lee, Upstate Medical Univ./ SUNY. . . . . .[6916-50]

2:40 pm: **Combined thermal-elastic modeling of the normal and tumorous breast**, Li Jiang, The George Washington Univ.; Wang Zhan, Univ. of California/San Francisco; Murray H. Loew, The George Washington Univ. . . . . .[6916-51]

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

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Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

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

Angiography
Chair: **Kenneth H. Wong,**
Georgetown Univ.

1:20 pm: **Detection and visualization of endoleaks in CT data for monitoring of thoracic and abdominal aortic aneurysm stents**, Jing Lu, Univ. of Erlangen (Germany) and Siemens Medical Solutions (Germany); Jan Egger, Philipps-Univ. Marburg (Germany) and Siemens Medical Solutions (Germany); Andreas Wimmer, Univ. of Erlangen (Germany) and Siemens Medical Solutions (Germany); Stefan Grosskopf, Siemens Medical Solutions (Germany); Bernd Freisleben, Philipps-Univ. Marburg (Germany) . . . . . .[6918-50]

1:40 pm: **Coronary CT angiography: IVUS image fusion for quantitative plaque and stenosis analyses**, Henk A. Marquering, Jouke Dijkstra, Leids Univ. Medisch Ctr. (Netherlands); Quentin J. A.Besnehard, Julien P. M.Duthe, Univ. de Poitiers (France); Joanne D. Schuijf, Jeroen J. Bax, Johan H. C.Reiber, Leids Univ. Medisch Ctr. (Netherlands) . . . . . .[6918-51]

2:00 pm: **Quantification of the aortic arch morphology in 3D CTA images for endovascular aortic repair (EVAR)**, Stefan Wörz, Ruprecht-Karls-Univ. Heidelberg (Germany); Hendrik von Tengg-Kobligk, Verena Henninger, Deutsches Krebsforschungszentrum (Germany); Dittmar Böckler, Ruprecht-Karls-Univ. Heidelberg (Germany); Hans-Ulrich Kauczor, Karl Rohr, Deutsches Krebsforschungszentrum (Germany) . . . . . .[6918-52]

2:20 pm: **In-vivo endovascular image guided interventions (EIGI) using the high-sensitivity micro-angiographic fluoroscope (HS-MAF)**, Ciprian N. Ionita, Girijesh K. Yadava, Christos M. Keleshis, Kenneth R. Hoffmann, Daniel R. Bednarek, Amit Jain, Stephen Rudin, Univ. at Buffalo . . . .[6918-53]

2:40 pm: **Automated determination of optimal angiographic viewing angles for coronary artery bifurcations from CTA data**, Pieter H. Kitslaar, Henk A. Marquering, Wouter J. Jukema, Gerhard Koning, Maarten Nieber, Leids Univ. Medisch Ctr. (Netherlands); Albert M. Vossepoel, Technische Univ. Delft (Netherlands); Jeroen J. Bax, Johan H. C.Reiber, Leids Univ. Medisch Ctr. (Netherlands) . . . . . .[6918-54]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 7
Room: Town & Country. Tues. 3:30 to 5:30 pm

Dual Energy
Session Chair: **John Yorkston,** Eastman Kodak Co.

3:30 pm: **Optimization of dual energy contrast enhanced breast tomosynthesis for improved mammographic lesion detection and diagnosis**, Robert S. Saunders, Jr., Ehsan Samei, Duke Univ.; Cristian T. Badea, Duke Univ. Medical Ctr.; Hong Yuan, Duke Univ.; Ketankumar Ghaghada, Yi Qi, Laurence W. Hedlund, Duke Univ. Medical Ctr.; Srinivasan Mukundan, Duke Univ. . . . . .[6913-33]

3:50 pm: **Optimization of beam parameters and iodine quantification in dual-energy contrast enhanced digital breast tomosynthesis**, Sylvie Puong, GE Healthcare France (France); Nicolas Duchateau, Institut d'Optique (France); Xavier Bouchevreau, Razvan Iordache, Serge L. Muller, GE Healthcare France (France) . . . . . .[6913-34]

4:10 pm: **Multiprism x-ray lenses for dual energy imaging**, Erik Fredenberg, Björn Cederström, Kungliga Tekniska Högskolan (Sweden); Mats V. Lundqvist, Sectra AB (Sweden); Carolina Ribbing, Uppsala Univ. (Sweden); Magnus C. Aslund, Kungliga Tekniska Högskolan (Sweden); Felix Diekmann, Charité - University Hospital (Germany); Robert M. Nishikawa, The Univ. of Chicago; Mats E. Danielsson, Kungliga Tekniska Högskolan (Sweden) . . .[6913-35]

4:30 pm: **NEQ and task in dual-energy imaging: from cascaded systems analysis to human observer performance**, Samuel Richard, Univ. of Toronto (Canada); Jeffrey H. Siewerdsen, Princess Margaret Hospital (Canada); Daniel J. Tward, Univ. of Toronto (Canada). . . . . .[6913-36]

4:50 pm: **Low-dose dual-energy computed tomography for PET attenuation correction with statistical sinogram restoration**, Joonki Noh, Jeffrey A. Fessler, Univ. of Michigan; Paul E. Kinahan, Univ. of Washington . . . .[6913-37]

5:10 pm: **Analysis of fast kV-switching in dual energy CT using a pre-reconstruction decomposition technique,** Yu Zou, Michael D. Silver, Toshiba Medical Research Institute USA . . . . . .[6913-38]

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Conference 6914 continued
Image Processing
Room: San Diego

SESSION 11
Room: San Diego . . . . . Tues. 3:30 to 5:30 pm

Segmentation II: Applications
Session Chair: **Christian Barillot,** Institut de Recherche en Informatique et Systèmes Aléatoires (France)

3:30 pm: **Shape priors for segmentation of the cervix region within uterine cervix images**, Shelly Lotenberg, Tel-Aviv Univ. (Israel); Shiri Gordon, Hayit Greenspan, Tel Aviv Univ. (Israel) . . . . . .[6914-58]

3:50 pm: **Use of a CT statistical deformation model for multimodal pelvic bone segmentation**, Stephen Thompson, Univ. College London (United Kingdom); Graeme P. Penney, King's College London (United Kingdom); Damien Buie, Univ. College London (United Kingdom); Prokar Dasgupta, Guy's and St Thomas' NHS Foundation Trust (United Kingdom); David J. Hawkes, Univ. College London (United Kingdom) . . . . . .[6914-59]

4:10 pm: **(ST) Prostate segmentation from 3D transrectal ultrasound using statistical shape models and local histogram matching**, Tobias Heimann, Matthias Baumhauer, Tobias Simpfendörfer, Hans-Peter Meinzer, Ivo Wolf, Deutsches Krebsforschungszentrum (Germany) . . . . . .[6914-60]

4:20 pm: **(ST) ARGALI: an automatic cup-to-disc ratio measurement system for glaucoma analysis using level-set image processing**, Jiang Liu, Joo Hwee Lim, Institute for Infocomm Research (Singapore); Xiao Jia, Fengshou YIN, National Univ. of Singapore (Singapore); Huiqi Li, Institute for Infocomm Research (Singapore); Tien Yin Wong, Raghavan Lavanya M.D., Singapore Eye Research Institute (Singapore) . . . . . .[6914-61]

4:30 pm: **Vessel segmentation in 3D spectral OCT scans of the retina**, Meindert Niemeijer, Mona Haeker, The Univ. of Iowa; Bram van Ginneken, The Univ. of Iowa and Univ. Medisch Ctr. Utrecht (Netherlands); Milan Sonka M.D., The Univ. of Iowa; Michael D. Abràmoff M.D., The Univ. of Iowa Hospitals and Clinics . . . . . .[6914-62]

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

Breast Imaging CAD
Session Chair: **J. Michael Brady,** Univ. of Oxford (United Kingdom)

3:30 pm: **Computerized self-assessment of automated lesion segmentation in breast ultrasound: implication for CADx applied to findings in the axilla**, Karen Drukker, Maryellen L. Giger, The Univ. of Chicago . . . . . .[6915-15]

3:50 pm: **Design and evaluation of a new automated method for the segmentation and characterization of masses on ultrasound images**, Jing Cui, Berkman Sahiner, Heang-Ping Chan, Alexis Nees, Chintana Paramagul, Lubomir Hadjiyski, Chuan Zhou, Jiazheng Shi, Univ. of Michigan . . . . . .[6915-16]

4:10 pm: **Computer-aided diagnosis of breast color elastography**, Ruey-Feng Chang, National Taiwan Univ. (Taiwan); Wei-Chih Shen, National Chung Cheng Univ. (Taiwan); Min-Chun Yang, National Taiwan Univ. (Taiwan); Woo Kyung Moon, Seoul National Univ. of Technology (South Korea); Etsuo Takada M.D., Dokkyo Medical Univ. (Japan); Yu-Chun Ho, National Chung Cheng Univ. (Taiwan); Michiko Nakajima, Masayuki Kobayashi, Saitama Medical Univ. (Japan). . . . . .[6915-17]

4:30 pm: **Computer-aided classification of lesions by means of their kinetic signatures in dynamic contrast-enhanced MR images**, Thorsten Twellmann, Bart M. ter Haar Romeny, Technische Univ. Eindhoven (Netherlands) . . . . . .[6915-18]

4:50 pm: **Expanded pharmacokinetic model for population studies in breast MRI**, Vandana Mohan, Georgia Institute of Technology and Siemens Medical Solutions USA, Inc.; Yoshihisa Shinagawa, Gerardo Hermosillo, Siemens Medical Solutions USA, Inc. . . . . .[6915-19]

5:10 pm: **A knowledge-based approach to the computer-aided diagnosis of mammographic masses,** Matthias Elter, Erik Hasslmeyer, Fraunhofer Institute for Integrated Circuits IIS (Germany) .[6915-20]

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Conference 6916 continued
Physiology, Function, and Structure from Medical Images
Room: Royal Palm I-III

SESSION 11
Room: Royal Palm I-III . Tues. 3:30 to 5:30 pm

Animal/Molecular Imaging
Session Chair: **Erik L. Ritman,** Mayo Clinic College of Medicine

3:30 pm: **Model-based segmentation and quantification of subcellular structures in 2D and 3D fluorescent microscopy images**, Stefan Wörz, Ruprecht-Karls-Univ. Heidelberg (Germany); Stefan Heinzer, Matthias Weiss, German Cancer Research Ctr. (Germany); Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany) . . . . .[6916-53]

3:50 pm: **Automated analysis of siRNA screens of cells infected by hepatitis C and dengue viruses based on immunofluorescence microscopy images**, Petr Matula, Ruprecht-Karls-Univ. Heidelberg (Germany) and German Cancer Research Ctr. (Germany); Anil Kumar, Ilka Wörz, Ruprecht-Karls-Univ. Heidelberg (Germany); Nathalie Harder, Ruprecht-Karls-Univ. Heidelberg (Germany) and German Cancer Research Ctr. (Germany); Holger Erfle, Ralf Bartenschlager, Ruprecht-Karls-Univ. Heidelberg (Germany); Roland Eils, Karl Rohr, Ruprecht-Karls-Univ. Heidelberg (Germany) and German Cancer Research Ctr. (Germany) . . . . . .[6916-54]

4:10 pm: **Dynamic perfusion CT in the evaluation of distal small pulmonary emboli in an animal model**, Yang Wang, Michael F. McNitt-Gray, Fereidoun G. Abtin, Lloyd E. Greaser, Michael C. Fishbein M.D., Stefan G. Ruehm, Jonathan G. Goldin, Univ. of California/Los Angeles . . . . . .[6916-55]

4:30 pm: **Whole mouse cryo-imaging**, David L. Wilson, Debashish Roy, Grant Steyer, Madhusudhana Gargesha, Meredith Stone, Eliot McKinley, Case Western Reserve Univ. . . . . .[6916-56]

5:10 pm: **In vivo and ex vivo imaging of alveolar structure and function using a custom fiber optic laser scanning confocal microscope**, Eman Namati, The Univ. of Iowa Hospitals and Clinics and Flinders Univ. (Australia); Jacqueline Thiesse, Jessica de Ryk, Geoffrey McLennan M.D., The Univ. of Iowa Hospitals and Clinics. . . . . .[6916-57]

4:50 pm: **Three-dimensional bioluminescent source reconstruction method based on nodes of adaptive FEM**, Chenghu Qin, Jie Tian, Yujie Lv, Wei Yang, Institute of Automation (China) . . .[6916-58]

Conference 6918 continued
Visualization, Image-guided Procedures, and Modeling
Room: California

SESSION 11
Room: California . . . . . Tues. 3:30 to 5:30 pm

Orthopedic Intervention
Session Chair: **Kevin Robert Cleary,** Georgetown Univ. Medical Ctr.

3:30 pm: **Accuracy analysis of an image-guided system for vertebroplasty based on electromagnetic tracking of instruments**, Jienan Ding, Georgetown Univ. Medical Ctr. and Tianjin Univ. (China); Peng Cheng, Emmanuel Wilson, Georgetown Univ. Medical Ctr.; Noureen Khan, Case Western Reserve Univ.; Vance Watson M.D., Kevin Cleary, Ziv Yaniv, Georgetown Univ. Medical Ctr. . . .[6918-55]

3:50 pm: **Optimization of spine surgery planning with 3D templating tools**, Kurt E. Augustine, Paul M. Huddleston M.D., David R. Holmes III, Shyam M. Shridharani, Richard A. Robb, Mayo Clinic . . . .[6918-56]

4:10 pm: **2D/3D registration with the CMA-ES method**, Ren Hui Gong, Purang Abolmaesumi, Queen's Univ. (Canada). . . . [6918-57]

4:30 pm: **Acetabular rim and surface segmentation for hip surgery planning and dysplasia evaluation**, Sovira Tan, Jianhua Yao, Lawrence Yao, Ronald M. Summers, Michael M. Ward, National Institutes of Health . . . . . .[6918-58]

4:50 pm: **A simulator for surgery training: optimal sensory stimuli in a bone pinning simulation**, Stefan Daenzer, Univ. Karlsruhe (Germany); Klaus H. Fritzsche, German Cancer Research Ctr. (Germany) .[6918-59]

5:10 pm: **CT and MR image fusion for CSF leak diagnosis**, Yangqiu Hu, David R. Haynor, Kenneth R. Maravilla, Univ. of Washington . . . . . .[6918-60]

Tuesday · 19 February

Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

WORKSHOP

Multi-Energy X-ray and CT Imaging: Where we are and where we will go?

Town & Country Room
Tues. 5:45 to 7:45 pm

Panel Moderators: **Katsuyuki Taguchi,** Johns Hopkins Univ. and **Thomas G. Flohr,** Siemens Medical Solutions (Germany)

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Conference 6914 continued
Image Processing
Room: San Diego

SESSION 11 continued
Room: San Diego . . . . . Tues. 3:30 to 5:30 pm

Segmentation II: Applications

4:50 pm: **Lymph node segmentation on CT images by a shape model guided deformable surface method**, Daniel Maleike, Deutsches Krebsforschungszentrum (Germany); Michael Fabel, Univ. Schleswig-Holstein (Germany); Ralf Tetzlaff, Hendrik von Tengg-Kobligk, Tobias Heimann, Hans-Peter Meinzer, Ivo Wolf, Deutsches Krebsforschungszentrum (Germany) . . . . . .[6914-63]

5:10 pm: **A novel shape prior based segmentation of touching or overlapping ellipse-like nuclei**, Xiaorong He, Qingmin Liao, Tsinghua Univ. (China) . . . . .[6914-64]

Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

WORKSHOP

Real-time Demonstrations and Live Performance Assessments

Golden West Room
Tues. 5:45 to 7:45 pm

Michael F. McNitt-Gray, Univ. of California/Los Angeles;
Bram van Ginneken, Univ. Medisch Ctr. Utrecht (Netherlands);
Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands);
Maryellen L. Giger, The Univ. of Chicago

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3D Imaging Abstracts Academic Access Alerts Archival Authoritative Availability BibTeX Bookmarking CAD Citation Collaboration Collections Communications Computed Tomography Connected Contrast Agents CrossRef Data Mining Diagnosis DICOM Display e-First Electrical Impedance EndNote Endoscopy Engineering Experts Fast Findability Fluoroscopy Gamma Ray Global Google Scholar Image Processing Imaging Informatics Impact Factor Industry Innovation INSPEC Interdisciplinary Intuitive IP Journals Letters Medical Imaging Medline Microscopy Modeling Molecular Imaging MRI Multimedia MySPIE Networking Not-for-Profit Nuclear Medicine OCT PACS PET Physiology Portico Prior Art Publish Radiology Refereed Reference Linking RefWorks Relevance RSS Scitation Scitopia.org Searchability Segmentation Seminal Signal Processing Simulation Technology Transfer Timeliness Tools Trends Ultrasound Vetted X-Ray Yahoo!

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

Breast Tissue Modeling and Estimation

Session Chair: **Ehsan Samei,** Duke Univ.

8:00 am: **Three-dimensional computer generated breast phantom based on empirical data**, Christina M. Li, W. Paul Segars, Duke Univ.; Alexander I. Veress, The Univ. of Utah; John M. Boone, Univ. of California/Davis; James T. Dobbins III, Duke Univ. . . . . [6913-39]

8:20 am: **Using mastectomy specimens to develop breast models for breast tomosynthesis and CT breast imaging**, J. Michael O'Connor, Mini Das, Clay S. Didier, Univ. of Massachusetts Medical School; Mufeed M. Mahmoud, Univ. of Massachusetts/Lowell; Stephen J. Glick, Univ. of Massachusetts Medical School . . . . . [6913-40]

8:40 am: **Quantifying breast structure in digital breast tomosynthesis**, Robert M. Nishikawa, The Univ. of Chicago; Emma Engström, Kungliga Tekniska Högskolan (Sweden); Ingrid S. Reiser, The Univ. of Chicago; Daniel B. Kopans, Massachusetts General Hospital . [6913-41]

9:00 am: **Simulation of mammograms and tomosynthesis with cone beam breast CT images**, Tao Han, Chris C. Shaw, Lingyun Chen, Chao-Jen Lai, Xinming Liu, Tianpeng Wang, The Univ. of Texas M.D. Anderson Cancer Ctr. . . . . [6913-42]

9:20 am: **Breast percent density estimation from 3D reconstructed digital breast tomosynthesis images**, Predrag R. Bakic, Despina Kontos, Ann-Katherine G. Carton, Andrew D. A.Maidment, Univ. of Pennsylvania . [6913-43]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

Cardiac, Neuro, and Retinal CAD

Session Chair: **Kyongtae Ty Bae,** Univ. of Pittsburgh

8:00 am: **Computerized assessment of coronary calcified plaques in CT images of a dynamic cardiac phantom**, Zachary B. Rodgers, Martin T. King, Maryellen L. Giger, Dianna Bardo, Michael W. Vannier, Li Lan, Kenji Suzuki, The Univ. of Chicago . . . [6915-21]

8:20 am: **Hotspot quantification of myocardial focal tracer uptake from molecular targeted SPECT/CT images: canine validation**, Yi-Hwa Liu, Zakir Sahul, Yale Univ.; Christopher Weyman, Yale Univ. School of Medicine; William J. Ryder, Donald Dione, Lawrence Dobrucki, Choukri Mekkaoui, Matthew Brennan, Xiaoyue Hu, Christi Hawley, Albert J. Sinusas, Yale Univ. . . . . [6915-22]

8:40 am: **Automated segmentation and tracking of coronary arteries in ECG-gated cardiac CT scans**, Chuan Zhou, Heang-Ping Chan, Aamer R. Chughtai, Smita Patel, Lubomir M. Hadjiiski, Berkman Sahiner, Jun Wei, Jun Ge, Ella A. Kazerooni, Univ. of Michigan . . . . . [6915-23]

9:00 am: **Computer-aided prognosis of neuroblastoma: classification of stromal development on whole-slide images**, Olcay H. Sertel, Jun H. Kong, The Ohio State Univ.; Hiroyuki Shimada, Univ. of Southern California; Umit Catalyurek, Joel H. Saltz, Metin Gurcan, The Ohio State Univ. . . . [6915-24]

9:20 am: **Automatic classification and detection of clinically relevant images for diabetic retinopathy**, Xinyu Xu, Baoxin Li, Arizona State Univ. . . . . [6915-25]

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

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Conference 6917 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

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

Keynote and Eye Movement

Session Chair: **Craig K. Abbey,** Univ. of California/Santa Barbara

8:00 am: **An unexpected research career: How a short project became long (The annual Harold L. Kundel, MD, Honorary Lecture)** *(Invited Paper, Presentation Only)*, Arthur E. Burgess, Harvard Medical School (Retired). . . . . [6917-01]

9:00 am: **Performance changes in lung nodule detection following perceptual feedback of eye movements**, Tim Donovan, David J. Manning, Univ. of Cumbria (United Kingdom); Trevor Crawford, Lancaster Univ. (United Kingdom) . . . . . [6917-02]

9:20 am: **How much agreement is there in the visual search strategy of experts reading mammograms?**, Claudia Mello-Thoms, Univ. of Pittsburgh . . . [6917-03]

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

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Conference 6919 continued
PACS and Imaging Informatics
Room: California

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

Infrastructure and Standards

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

8:00 am: **How HL7 version 3 is used at the Sahlgrenska University Hospital to exchange information with a central archive**, Göran Carlsson, Ludmilla Bogavac, Tommy Hagberg, Mikael Wintell, Sahlgrenska Univ. Hospital (Sweden) . . . . . [6919-01]

8:20 am: **A taxonomy and evaluation of free non-diagnostic DICOM software tools**, Wei Liao, Thomas M. Deserno, Klaus Spitzer, RWTH Aachen (Germany) . . . . . [6919-02]

8:40 am: **Integrating DICOM structure reporting (SR) into the medical imaging informatics data grid**, Jasper Lee, Jorge R. Documet, Brent J. Liu, Univ. of Southern California . . . . . [6919-03]

9:00 am: **A DICOM-RT radiation oncology ePR with decision support utilizing a quantified knowledge base from historical data**, Jorge R. Documet, Brent J. Liu, Anh H. T.Le, Univ. of Southern California; Maria Y. Y.Law, The Hong Kong Polytechnic Univ. . . . [6919-04]

9:20 am: **Brokerage mechanism proposal for teleradiology studies distribution**, Daniel F. Polónia, Augusto M. Silva, Carlos M. A.Costa, José Luís Oliveira, Univ. de Aveiro (Portugal) and Consultant (Portugal) . . . . . [6919-05]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

Breast Imaging
Session Chair: **John A. Rowlands,** Sunnybrook and Women's Health Sciences Ctr. (Canada)

10:10 am: **Evaluation of a variable dose aquisition methodology for breast tomosynthesis**, Mini Das, Howard C. Gifford, J. Michael O'Connor, Stephen J. Glick, Univ. of Massachusetts Medical School [6913-44]

10:30 am: **Novel gantry-free digital breast tomosynthesis (DBT) system using a stationary multibeam field emission x-ray source array based on carbon nanotubes**, Guang Yang, Ramya Rajaram, Guohua Cao, Shabana Sultana, Peng Wang, The Univ. of North Carolina at Chapel Hill; David S. Lalush, North Carolina State Univ.; Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill. . . . . [6913-45]

10:50 am: **Imaging CDMAM phantom with tomosynthesis**, Baorui Ren, Andrew P. Smith, Christopher C. Ruth, Zhenxue Jing, Hologic, Inc.. . . . . [6913-46]

11:10 am: **Evaluation of software in reading images of the CDMAM test object to assess digital mammography systems**, Kenneth C. Young, Abdulaziz Al Sager, Jennifer M. Oduko, The Royal Surrey County Hospital NHS Trust (United Kingdom); Hilde T. C.Bosmans, Beatrijs Verbrugge, Univ. Ziekenhuizen Leuven (Belgium); Ruben Van Engen, Tanya Geertse, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [6913-47]

11:30 am: **Temporal change analysis for improved tumor detection in dedicated CT breast imaging**, Joyoni Dey, J. Michael O'Connor, Stephen J. Glick, Univ. of Massachusetts Medical School . . . . . [6913-48]

11:50 am: **Feasibility of dual-resolution cone beam breast CT: a simulation study**, Lingyun Chen, Chris C. Shaw, Chao-Jen Lai, Tao Han, Xinming Liu, Tianpeng Wang, The Univ. of Texas M.D. Anderson Cancer Ctr.. . . . . [6913-49]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

Colon and Prostate CAD
Session Chair: **Kensaku Mori,** Nagoya Univ. (Japan)

10:10 am: **Learning from imbalanced data: a comparative study for colon CAD**, Xiaoyun Yang, Yalin Zheng, Musib M. Siddique, Gareth R. Beddoe, Medicsight PLC (United Kingdom) . . . . . [6915-26]

10:30 am: **Reduction of false positives by extracting fuzzy rules from data for polyp detection in CTC scans**, Musib M. Siddique, Yalin Zheng, Xiaoyun Yang, Gareth R. Beddoe, Medicsight PLC (United Kingdom) . . . . . [6915-27]

10:50 am: **Computer aided detection of polyps in virtual colonoscopy with sameday fecal tagging**, Silvia Delsanto, Lia Morra, iM3D S.p.A. Medical Imaging Lab. (Italy); Delia Campanella M.D., Vincenzo Tartaglia M.D., Institute for Cancer Research and Treatment (Italy); Riccardo Baggio, Silvano Agliozzo, iM3D S.p.A. Medical Imaging Lab. (Italy); Francesca Cerri M.D., Emanuele Neri M.D., Univ. di Pisa (Italy); Franco Iafrate, Andrea Laghi, Univ degli Studi di Roma La Sapienza (Italy); Daniele Regge M.D., Institute for Cancer Research and Treatment (Italy) . . . . . [6915-28]

11:10 am: **A consensus embedding approach for segmentation of high resolution in vivo prostate magnetic resonance imagery**, Satish E. Viswanath, Rutgers Univ.; Mark A. Rosen, Univ. of Pennsylvania; Anant Madabhushi, Rutgers Univ.. . . . . [6915-29]

11:30 am: **Improving supervised classification accuracy using non-rigid multimodal image registration: detecting prostate cancer**, Jonathan C. Chappelow, Satish E. Viswanath, James Monaco, Rutgers Univ.; Mark A. Rosen, John Tomaszewski, Michael Feldman, Univ. of Pennsylvania; Anant Madabhushi, Rutgers Univ.. . . . . [6915-30]

11:50 am: **Combining T2-weighted with dynamic MR images for computerized classification of prostate lesions**, Pieter Vos, Jr., Thomas Hambrock M.D., Jelle Barentsz M.D., Henkjan H. Huisman, Sr., Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [6915-31]

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

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Conference 6917 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

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

Technology Assessment
Session Chair: **David L. Wilson,** Case Western Reserve Univ.

10:10 am: **Comprehensive evaluation of an image segmentation technique for measuring tumor volume from CT images**, Xiang Deng, Haibin Huang, Lei Zhu, Guangwei Du, Xiaodong Xu, Siemens Ltd. (China); Yiyong Sun, Chenyang Xu, Marie-Pierre Jolly, Siemens Corporate Research; Jiuhong Chen, Jie Xiao, Reto D. Merges, Siemens Ltd. (China); Michael Suehling, Daniel Rinck, Siemens Medical Solutions (Germany); Lan Song, Zhengyu Jin, Peking Union Medical College Hospital (China); Zhaoxia Jiang, Bin Wu, Xiaohong Wang, Shuai Zhang, Weijun Peng, Fudan Univ. Cancer Hospital (China) . . . . . [6917-04]

10:30 am: **Performance study of a globally elastic locally rigid matching algorithm for follow-up chest CT**, Rafael Wiemker, Philips Research Europe Hamburg (Germany); Bartjan de Hoop, Univ. Medical Ctr. Utrecht (Netherlands); Sven Kabus, Philips Research Europe Hamburg; Hester Gietema, Univ. Medical Ctr. Utrecht (Netherlands); Roland Opfer, Philips Research Europe Hamburg (Germany); Ekta Dharaiya, Philips Medical Systems. . . . . [6917-05]

10:50 am: **PET/CT detectability and classification of simulated pulmonary lesions using an SUV correction scheme**, Andrew N. Morrow, Kenneth L. Matthews II, Louisiana State Univ.; L. S. Bujenovic M.D., Our Lady of the Lake Regional Medical Ctr. . . [6917-06]

11:10 am: **Comparing signal-based and case-based methodologies for CAD assessment in a detection task**, Sophie Paquerault, Frank W. Samuelson, Nicholas A. Petrick, Kyle J. Myers, U.S. Food and Drug Administration . . . . . [6917-07]

11:30 am: **Performance evaluation of image processing algorithms in digital mammography**, Federica Zanca, Chantal Van Ongeval M.D., Jurgen Jacobs, Herman Pauwels, Guy Marchal M.D., Hilde T. C.Bosmans, Univ. Ziekenhuizen Leuven (Belgium) . . . . . [6917-08]

11:50 am: **The use of Z3d software in breast MRI to improve sensitivity and specificity in the diagnosis of malignant neoplasms**, Matthew J. Kuhn, Michael J. Wendel M.D., Theodore J. Gleason M.D., Southern Illinois Univ. School of Medicine; Chris Wood, Clario Medical . . . . . [6917-09]

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

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Conference 6919 continued
PACS and Imaging Informatics
Room: California

SESSION 2
Room: California . . . . . Wed. 10:10 to 11:50 am

Databases and Data Mining
Session Chair: **Wyatt Tellis,** Univ. of California/ San Francisco

10:10 am: **A web-accessible content-based cervicographic image retrieval system**, Zhiyun Xue, L. Rodney Long, Sameer K. Antani, National Library of Medicine; Jose Jeronimo, National Cancer Institute; George R. Thoma, National Library of Medicine . . . . . [6919-06]

10:30 am: **Retrieving clinical cases through a concept space representation of text and images**, Shahram Ebadollahi, David E. Johnson, IBM Thomas J. Watson Research Ctr.; Mamadou Diao, Georgia Institute of Technology . . . . . [6919-07]

10:50 am: **Local versus global texture analysis for lung nodule image retrieval**, Ryan D. Datteri, Gonzaga Univ.; Daniela S. Raicu, Jacob D. Furst, DePaul Univ. . . . . [6919-08]

11:10 am: **RadSearch: a RIS/PACS integrated query tool**, Sinchai Tsao, Paymann Moin M.D., Jorge R. Documet, Kevin Wang, Brent J. Liu, Univ. of Southern California . . . . . [6919-09]

11:30 am: **Grid-enabled mammographic auditing and training system**, Moi Hoon Yap, Alastair G. Gale, Loughborough Univ. (United Kingdom). . . . . [6919-11]

Lunch Break . . . . . 11:50 am to 1:20 pm

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

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

Cardiac Imaging
Session Chair: **Christoph Hoeschen,** Forschungszentrum für Umwelt und Gesundheit, GmbH (Germany)

1:20 pm: **Temporally targeted image reconstruction for gated-computed tomography**, Brian E. Nett, Shuai Leng, Joseph N. Zambelli, Scott B. Reeder, Michael A. Speidel, Univ. of Wisconsin/Madison; Jiang Hsieh, GE Healthcare; Guang-Hong Chen, Univ. of Wisconsin/Madison. . . . . [6913-50]

1:40 pm: **Cardiac C-arm CT: image-based gating**, Marcus Pruemmer, Christopher Rohkohl, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Rebecca A. Fahrig, Stanford Univ.; Guenter Lauritsch, Siemens Medical Solutions (Germany); Joachim M. Hornegger, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [6913-51]

2:00 pm: **Cardiac imaging in diagnostic volumetric CT using multisector data acquisition and image reconstruction: step-and-shoot scan vs. helical scan**, Xiangyang Tang, Jiang Hsieh, John Seamans, Fang Dong, Darin R. Okerlund, GE Healthcare [6913-52]

2:20 pm: **Frame-by-frame 3D catheter tracking methods for an inverse geometry cardiac interventional x-ray system**, Michael A. Speidel, Univ. of Wisconsin/Madison; Augustus P. Lowell, Joseph A. Heanue, Triple Ring Technologies, Inc.; Michael S. Van Lysel, Univ. of Wisconsin/Madison . . . . . [6913-53]

2:40 pm: **CT blurring induced bias of quantitative in-stent restenosis analyses**, Henk A. Marquering, Berend C. Stoel, Jouke Dijkstra, Koos Geleijns, Leids Univ. Medisch Ctr. (Netherlands); Marion Persoon, Bio-Imaging Technologies, B.V. (Netherlands); J. Wouter Jukema M.D., Leids Univ. Medisch Ctr. (Netherlands); Geert Streekstra, Academisch Medisch Ctr. (Netherlands); Johan H. C.Reiber, Leids Univ. Medisch Ctr. (Netherlands) . . . . . [6913-54]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 7
Room: Golden West . . . . . Wed. 1:20 to 3:00 pm

Lung Nodule and Analysis
Session Chair: **Noboru Niki,** The Univ. of Tokushima (Japan)

1:20 pm: **Automated detection of nodules attached to the pleural and mediastinal surface in low-dose CT scans**, Bram van Ginneken, Andre Tan, Keelin Murphy, Bart-Jan de Hoop, Mathias Prokop, Univ. Medisch Ctr. Utrecht (Netherlands). . . . . [6915-32]

1:40 pm: **Performance levels for computerized detection of nodules in different size and pattern groups on thin-slice CT**, Qiang Li, Feng Li, Kunio Doi, The Univ. of Chicago. . . . . [6915-33]

2:00 pm: **A novel method of partitioning regions in lungs and their usage in feature extraction for reducing false positives**, Mausumi Acharyya, Mysore Siddu Dinesh, Siemens Information Systems Ltd. (India); Alexandra Manevitch, Jonathan Stoeckel, Siemens Israel Ltd. (Israel) . . . . . [6915-34]

2:20 pm: **Comparison of computer versus manual determination of pulmonary nodule volumes in CT scans**, Alberto M. Biancardi, Anthony P. Reeves, Artit C. Jirapatnakul, Tatiyana V. Apanasovich, Cornell Univ.; Claudia I. Henschke, David F. Yankelevitz, Cornell Medical Ctr.. . . . . [6915-35]

2:40 pm: **Repeatability and noise robustness of spicularity features for computer-aided characterization of pulmonary nodules in CT**, Rafael Wiemker, Roland Opfer, Thomas Bülow, Sven Kabus, Philips Research Europe Hamburg (Germany); Ekta Dharaiya, Philips Medical Systems . . . . . [6915-36]

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

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Conference 6917 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

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

ROC and Its Variants
Session Chair: **Kevin S. Berbaum,** The Univ. of Iowa Hospitals and Clinics

1:20 pm: **A novel partial area index of receiver operating characteristic (ROC) analysis**, Tao Wu, Haibin Huang, Guangwei Du, Siemens Ltd. (China); Yiyong Sun, Siemens Corporate Research. . . [6917-10]

1:40 pm: **Investigation of methods for analyzing location specific observer performance data**, Dev P. Chakraborty, Hong-Jun Yoon, Univ. of Pittsburgh . . . . . [6917-11]

2:00 pm: **Comparisons of two agreement measures**, Weimin Liu, U.S. Food and Drug Administration and Univ. of Maryland/Baltimore County; Brandon D. Gallas, U.S. Food and Drug Administration . . . . . [6917-12]

2:20 pm: **Three-class ROC analysis: a sequential decision model developed for the diagnostic task of simultaneous dual-isotope myocardial perfusion SPECT imaging**, Xin He, Eric C. Frey, Johns Hopkins School of Medicine . . . . . [6917-13]

2:40 pm: **Optimality of a utility-based performance metric for ROC analysis**, Darrin C. Edwards, Charles E. Metz, The Univ. of Chicago. . . . . [6917-14]

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

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Conference 6919 continued
PACS and Imaging Informatics
Room: California

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

Keynote and Clinical Applications I
Session Chair: **Katherine P. Andriole,** Brigham & Women's Hospital/Harvard Medical School

1:20 pm: **PACS in the clinical context: past, present, and future (Keynote)** *(Invited Paper, Presentation Only)*, David Avrin, Univ. of California/San Francisco . . . . . [6919-12]

2:20 pm: **A classification framework for lung tissue categorization**, Adrien Depeursinge, Jimison Iavindrasana, Asmâa Hidki, Gilles Cohen, Antoine Geissbuhler, Alexandra Platon, Pierre-Alexandre Poletti, Univ. Hospital of Geneva (Switzerland); Henning Müller, Univ. Hospital of Geneva (Switzerland) and Univ. of Applied Sciences Sierre (Switzerland). . . . . [6919-13]

2:40 pm: **Seeing through the window: pre-fetching strategies for out-of-core image processing algorithms**, Romulo Pinho, Kees Joost Batenburg, Jan Sijbers, Univ. Antwerpen (Belgium) . . . . . [6919-14]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 11
Room: Town & Country . . . . Wed. 3:30 to 5:30 pm

CT Applications

Session Chair: **Robert M. Nishikawa,** The Univ. of Chicago

3:30 pm: **Dependence of CT attenuation values on scanner type using in vivo measurements**, Mithun N. Prasad, Alicia Meza, Hyun J. Kim, Matthew S. Brown, Fereidoun G. Abtin, Jonathan G. Goldin, Michael F. McNitt-Gray, Univ. of California/Los Angeles . [6913-55]

3:50 pm: **Towards assessing the diagnostic influence of dose reduction in pediatric CT: a study based on simulated lung nodules**, Xiang Li, Ehsan Samei, David M. Delong, Duke Univ.; Robert P. Jones, Duke Univ. School of Medicine; James G. Colsher, GE Healthcare; Donald P. Frush, Duke Univ. Medical Ctr.. . . . [6913-56]

4:10 pm: **Noise properties of low-dose x-ray CT sinogram data in the radon space**, Zhengrong Liang, Jing Wang, Stony Brook Univ.; Hongbing Lu, Fourth Military Medical Univ. (China) . . . . . [6913-120]

4:30 pm: **Measurement of small lesions near metallic implants with mega-voltage cone beam CT**, Violeta Grigorescu, Jean Pouliot, Sven Prevrhal, Univ. of California/San Francisco . . . . . [6913-58]

4:50 pm: **Measurement of three-dimensional point spread functions in multidetector-row CT**, Yoshiki Kawata, The Univ. of Tokushima (Japan); Yoshihiro Nakaya, Shizuoka Cancer Ctr. Research Institute (Japan); Noboru Niki, The Univ. of Tokushima (Japan); Hironobu Ohmatsu, National Cancer Ctr. Hospital East (Japan); Kenji Eguchi, Tokai Univ. School of Medicine (Japan); Masahiro Kaneko, Noriyuki Moriyama, National Cancer Ctr. Hospital East (Japan) . . . . . [6913-59]

5:10 pm: **Correlation identification between internal/external tumor motion signals,** Huanmei Wu, Qingya Zhao, Purdue Univ.; Ross Berbeco, Brigham and Women's Hospital; Seiko Nishioka, NTT East Japan Sapporo Hospital (Japan); Hiroki Shirato, Hokkaido Univ. (Japan); Steve Jiang, Univ. of California/San Diego . . . . . [6913-60]

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 8
Room: Golden West . . . . . Wed. 3:30 to 5:30 pm

New Prospects

Session Chair: **Stephen Aylward,** Kitware, Inc.

3:30 pm: **Volume analysis of treatment response of head and neck lesions using 3D level set segmentation**, Lubomir M. Hadjiiski, Ethan Street, Berkman Sahiner, Sachin Gujar, Mohannad Ibrahim, Heang-Ping Chan, Suresh K. Mukherji, Univ. of Michigan . . . . . [6915-37]

3:50 pm: **Automatic lesion tracking for a PET/CT based computer aided cancer therapy monitoring system**, Roland Opfer, Philips Research Europe Hamburg (Germany); Winfried Brenner, Univ. Medical Ctr. Hamburg-Eppendorf (Germany); Ingwer C. Carlsen, Steffen Renisch, Joerg Sabczynski, Rafael Wiemker, Philips Research Europe Hamburg (Germany) [6915-38]

4:10 pm: **Unsupervised classification of cirrhotic livers using MRI data**, Gobert N. Lee, Gifu Univ. (Japan); Masayuki Kanematsu, Hiroki Kato, Gifu Univ. School of Medicine (Japan); Xiangrong Zhou, Takeshi Hara, Gifu Univ. (Japan); Hiroshi Kondo, Gifu Univ. School of Medicine (Japan); Hiroshi Fujita, Gifu Univ. (Japan); Hiroaki Hoshi, Gifu Univ. School of Medicine (Japan). . . . . [6915-39]

4:30 pm: **An information-theoretic view of the scheduling problem in whole-body CAD**, Yiqiang Zhan, Xiang S. Zhou, Arun Krishnan, Siemens Medical Solutions USA, Inc. . . . . [6915-40]

4:50 pm: **Multiparametric tissue abnormality characterization using manifold regularization**, Kayhan Batmanghelich, Xiaoying Wu, Clyde E. Markowitz, Ragini Verma, Univ. of Pennsylvania [6915-41]

5:10 pm: **Automated detection of breast vascular calcifications on full-field digital mammograms,** Jun Ge, Heang-Ping Chan, Berkman Sahiner, Chuan Zhou, Mark A. Helvie, Lubomir M. Hadjiiski, Jun Wei, Yiheng Zhang, Yi-Ta Wu, Jiazheng Shi, Univ. of Michigan . . . . . [6915-42]

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Conference 6917 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

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

Image Perception and Quality

Session Chair: **Claudia Mello-Thoms,** Univ. of Pittsburgh

3:30 pm: **Individualized training to address variability of radiologists' performance**, Shanghua Sun, Paul Taylor, Univ. College London (United Kingdom); Louise Wilkinson, Lisanne Khoo, St George's Healthcare NHS Trust (United Kingdom) . . . . . [6917-15]

3:50 pm: **Image perception by expert readers as a function of patient skin entrance dose levels in digital radiography**, Thomas Lehnert, Martin G. Mack, Thomas J. Vogl, Klinikum der Johann-Wolfgang Goethe-Univ. (Germany). . . . . [6917-16]

4:10 pm: **Towards perceptually driven image retrieval in mammography: a pilot observer study to assess visual similarity of masses**, Maciej A. Mazurowski, Jacek M. Zurada, Univ. of Louisville; Georgia D. Tourassi, Brian P. Harrawood, Duke Univ. Medical Ctr.. . . . . [6917-17]

4:30 pm: **Existence and perception of textural information predictive of atypical nevi - a preliminary study**, Paul Wighton, Simon Fraser Univ. (Canada); Tim K. Lee, British Columbia Cancer Research Ctr. (Canada); David I. McLean M.D., The Univ. of British Columbia (Canada); Harvey Lui M.D., British Columbia Cancer Research Ctr. (Canada); M. Stella Atkins, Simon Fraser Univ. (Canada) . . . . . [6917-18]

4:50 pm: **Mass detection on mammograms: signal variations and performance changes for human and model observers**, Cyril Castella, Institut Univ. de Radiophysique Appliquée (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Karen Kinkel M.D., Clinique des Grangettes (Switzerland); Miguel P. Eckstein, Craig K. Abbey, Univ. of California/Santa Barbara; Francis R. Verdun, Institut Univ. de Radiophysique Appliquée (Switzerland); Robert S. Saunders, Ehsan Samei, Duke Univ.; François O. Bochud, Institut Univ. de Radiophysique Appliquée (Switzerland) . . . . . [6917-19]

5:10 pm: **Weighted perceptual difference model (case-PDM) for MR image quality evaluation,** Jun Miao, Wilbur C. K.Wong, David L. Wilson, Case Western Reserve Univ. . . . . [6917-20]

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Conference 6919 continued
PACS and Imaging Informatics
Room: California

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

Clinical Applications II

Session Chair: **Khan M. Siddiqui,** VA Maryland Health Care System

3:30 pm: **Automated bone age assessment of older children using the radius**, Sinchai Tsao, Arkadiusz Gertych, Aifeng Zhang, Brent J. Liu, H. K. Huang, Univ. of Southern California . . . . . [6919-15]

3:50 pm: **Content-based image recognition for digital radiographs**, Hui Luo, Carestream Health, Inc.; Jiebo Luo, Eastman Kodak Co. . . . . [6919-16]

4:10 pm: **The design and implementation of decision support tools of proton beam therapy treatment planning for brain cancer patients**, Anh H. T.Le, Univ. of Southern California . . . . . [6919-17]

4:30 pm: **Web-based computer-aided-diagnosis (CAD) system for bone age assessment (BAA) of children**, Aifeng Zhang, Joshua Uyeda, Sinchai Tsao, Linda Vachon, Brent J. Liu, H. K. Huang, Univ. of Southern California . . . . . [6919-18]

4:50 pm: **Texture versus shape analysis for lung nodule similarity in computed tomography studies**, Marwa N. Muhammad, Bryn Mawr College; Daniela S. Raicu, Jacob D. Furst, Ekarin Varutbangkul, DePaul Univ. . . . . [6919-19]

5:10 pm: **Role of Computer Aided Detection (CAD) Integration: Case Study with Meniscal and Articular Cartilage CAD applications,** Nabile Safdar, Univ. of Maryland Medical System; Bharath Ramakrishna, Univ. of Maryland/Baltimore County; Khan M. Siddiqui, VA Maryland Health Care System; Eliot L. Siegel M.D., Univ. of Maryland Medical Ctr. . . . . [6919-20]

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The following posters will be on display Tuesday and Wednesday, 19-20 February in the Golden Pacific Ballroom. The Interactive Poster Session with authors in attendance will be Wednesday evening from 5:30 to 7:00 pm. Poster awards will be presented at 6:00 pm during the reception.

Conference 6913 Posters
Physics of Medical Imaging

Reconstruction

Few-view cone-beam computed tomography for image-guided radiation therapy, Seungryong Cho, Emil Y. Sidky, Charles A. Pelizzari, Xiaochuan M. Pan, The Univ. of Chicago . . . . . .[6913-83]

Tomosynthesis via total variation minimization reconstruction, Brian E. Nett, Shuai Leng, Julia V. Velikina, Guang-Hong Chen, Univ. of Wisconsin/Madison. . . . . .[6913-84]

Efficient extended field of view (FOV) reconstruction techniques for multi-slice helical CT, Herbert K. Bruder, Christoph Suess, Siemens Medical Solutions (Germany) . . . . . .[6913-85]

Expectation maximization SPECT reconstruction with a content adaptive singularity-based mesh-domain image model, Yao Lu, Hongwei Ye, Yuesheng Xu, Xiaofei Hu, Lixin Shen, Syracuse Univ.; David H. Feiglin, Upstate Medical Univ./SUNY; Edward D. Lipson, Syracuse Univ.; Andrzej Krol, Upstate Medical Univ./SUNY. . . . . .[6913-86]

Chord-based image reconstruction from clinical projection data, Martin T. King, Dan Xia, Xiaochuan M. Pan, Michael W. Vannier, Patrick J. La Riviere, Emil Y. Sidky, Maryellen L. Giger, The Univ. of Chicago . . . . . .[6913-87]

Electronic noise compensation in an iterative reconstruction algorithm for x-ray CT, Jingyan Xu, Benjamin M. W.Tsui, Johns Hopkins Univ. . . . . .[6913-88]

A rebinned BPF algorithm with a general source trajectory for ROI imaging, Junguo Bian, Dan Xia, The Univ. of Chicago; Lifeng Yu, Mayo Clinic College of Medicine; Emil Y. Sidky, Xiaochuan M. Pan, The Univ. of Chicago . . . . . .[6913-89]

An FBP image reconstruction algorithm for x-ray differential phase contrast CT, Zhihua Qi, Guang-Hong Chen, Univ. of Wisconsin/Madison . . . . . .[6913-90]

Development of a fully 3D adaptive system model for cone-beam SPECT expectation-maximization reconstruction, Hongwei Ye, Syracuse Univ.; David H. Feiglin, Upstate Medical Univ./SUNY; Edward D. Lipson, Syracuse Univ.; Andrzej Krol, Upstate Medical Univ./SUNY. . . . . .[6913-91]

Mesh model 2D reconstruction operator for SPECT, Ricard Delgado-Gonzalo, Jovan G. Brankov, Illinois Institute of Technology . . . . . .[6913-92]

Generic iterative reconstruction of multipinhole SPECT, William J. Ryder, Matthew Brennan, Albert J. Sinusas, Yi-Hwa Liu, Yale Univ. . . . . .[6913-93]

A blob-based tomographic reconstruction of 3D coronary trees from rotational x-ray angiography, Jian Zhou, Alexandre Bousse, Jean-Jacques Bellanger, Univ. de Rennes I (France); Limin Luo, Southeast Univ. (China); Jean-Louis Coatrieux, Univ. de Rennes I (France) . . . . . .[6913-94]

A hardware projector/backprojector pair for 3D PET reconstruction, Nicolas Gac, Stéphane Mancini, Michel Desvignes, Florian De Boissieu, Institut National Polytechnique de Grenoble (France); Anthonin Reilhac, CERMEP (France) . . . . . .[6913-95]

Automatic local thresholding of tomographic reconstructions based on the projection data, Kees Joost Batenburg, Jan Sijbers, Univ. Antwerpen (Belgium) . . . . . .[6913-96]

Cone-beam reconstruction using retrieved phase projections of in-line holography for breast imaging, Weixing Cai, Ruola Ning, Univ. of Rochester[6913-97]

SPECT reconstruction on the GPU, Christoph P. Vetter, Siemens Corporate Research; Rüdiger Westermann, Technische Univ. München (Germany) . . . . . .[6913-98]

Mojette and FRT tomographs, Hadi Fayad, Jean-Pierre V. Guédon, Univ. de Nantes (France); Imants D. Svalbe, Monash Univ. (Australia); Nicolas C. Normand, Univ. de Nantes (France); Yves J. Bizais, Univ. de Bretagne Occidentale (France) . . .[6913-99]

Accelerate helical cone-beam CT with graphics hardware, Wenyuan Bi, Zhiqiang Chen, Li Zhang, Yuxiang Xing, Tsinghua Univ. (China) . . . . . .[6913-100]

A projection-driven pre-correction technique for iterative reconstruction of helical cone-beam CT images, Synho Do, Massachusetts General Hospital; Zhuangli Liang, W. Clem Karl, Boston Univ.; Mannudeep K. Kalra, Thomas J. Brady, Homer H. Pien, Massachusetts General Hospital . . . . . .[6913-101]

Hardware accelerated C-arm fluoroscopy and CT: a pilot study, Dmitri Riabkov, Arvi Cheryauka, Alexander Tokhtuev, Todd Brown, GE Healthcare. . . . . .[6913-102]

A study on projection distribution of few-view reconstruction with total variation constraint, Xinhui Duan, Li Zhang, Yuxiang Xing, Zhiqiang Chen, Jianping Cheng, Tsinghua Univ. (China). . . . . .[6913-103]

PDE regularization for Bayesian reconstruction of emission tomography, Zhentian Wang, Li Zhang, Yuxiang Xing, Ziran Zhao, Tsinghua Univ. (China)[6913-104]

Truncation artifact and boundary artifact reduction in breast tomosynthesis reconstruction, Yiheng Zhang, Heang-Ping Chan, Yi-Ta Wu, Berkman Sahiner, Chuan Zhou, Jun Wei, Jun Ge, Lubomir M. Hadjiiski, Jiazheng Shi, Univ. of Michigan . .[6913-105]

A new reconstruction method to improve SNR for an inverse geometry CT system, Jongduk Baek, Norbert J. Pelc, Stanford Univ. . . . . .[6913-106]

Tomographic reconstruction of band-limited Hermite expansions, Wooram Park, Gregory S. Chirikjian, The Johns Hopkins Univ. . . . . .[6913-107]

MLSD-OSEM reconstruction algorithm for cosmic ray muon radiography, Yuanyuan Liu, Ziran Zhao, Zhiqiang Chen, Li Zhang, Yuxiang Xing, Tsinghua Univ. (China) . . . . . .[6913-108]

Algorithms

Lossy raw data compression in computed tomography with noise shaping to control image effects, Yao Xie, Adam S. Wang, Norbert J. Pelc, Stanford Univ. . . . . .[6913-109]

Beam hardening correction based on HL consistency in polychromatic transmission tomography, Xuanqin Mou, Shaojie Tang, Tao Luo, Yizhai Zhang, Xi'an Jiaotong Univ. (China); Hengyong Yu, Virginia Polytechnic Institute and State Univ. . . . . .[6913-110]

Effect of the frequency content and spatial location of raw data errors on CT images, Adam S. Wang, Yao Xie, Norbert J. Pelc, Stanford Univ.. . . . . .[6913-111]

A 3D metal artifact correction method in cone-beam CT bone imaging by using an implant image library, Yan Zhang, Ruola Ning, David L. Conover, Univ. of Rochester . . . . . .[6913-112]

Accurate measurement of respiratory airway wall thickness in CT images using a signal restoration technique, Sang-Joon Park, Tae Jung Kim, Seoul National Univ. College of Medicine (South Korea); Kwang Gi Kim, National Cancer Ctr. (South Korea); Young Jae Kim, Sang-Ho Lee, Jin Mo Goo, Jong Hyo Kim, Yun Sub Jung, Seoul National Univ. College of Medicine (South Korea) . . . . . .[6913-113]

Reconstruction artifacts in VRX CT scanner images, David A. Rendon, Frank A. DiBianca, Gary S. Keyes, The Univ. of Tennessee Health Science Ctr.. .[6913-114]

Quantification and elimination of windmill artifacts in multislice CT, Steven J. Utrup, Kevin M. Brown, Philips Medical Systems; Gilad Shechter, David Braunstien, Philips Medical Systems Technologies Ltd. (Israel); Sastry Kasibhatla, Philips Medical Systems. . . . . .[6913-115]

Three-dimensional vessel sizing and PSF estimation in CT volumes using Fourier analysis, Petru M. Dinu, Vikas Singh, Sebastian Schafer, Kenneth R. Hoffmann, Univ. at Buffalo . . . . . .[6913-116]

Effects of scanning orbit wobbling and detector tilting on cone-beam tomography, Yong Ding, Zikuan Chen, Northeastern Univ. (China) . . . . .[6913-117]

Quantitative comparison of weighted Feldkamp FBP full-scan and half-scan algorithms for contrast-enhanced CT breast imaging, Clay S. Didier, Yu Chen, J. Michael O'Connor, Univ. of Massachusetts Medical School; Mufeed M. Mahmoud, Univ. of Massachusetts/Lowell; Stephen J. Glick, Univ. of Massachusetts Medical School . . . . . .[6913-118]

Landmark based compensation of patient motion artifacts in computed tomography, Yves Pauchard, Steven K. Boyd, Univ. of Calgary (Canada) .[6913-119]

Measurement, Simulation, and Modeling

Temporal-noise measurements of a CMOS camera used for image quality measurements, Hans Roehrig, William J. Dallas, The Univ. of Arizona; Gary R. Redford, Optic Valley Photonics .[6913-121]

New automatic quality control methods for geometrical treatment planning system tools in external conformal radiotherapy, Eloïse C. Denis, Univ. de Nantes (France); Stéphane Beaumont, QualiFormeD SARL (France); Jean-Pierre V. Guédon, Univ. de Nantes (France); Tarraf J. Torfeh, QualiFormeD SARL (France); Nicolas C. Normand, Univ. de Nantes (France); Pascal Fenoglietto, Norbert Ailleres, Univ. Montpellier I (France). . . . . .[6913-122]

Digital phantoms for an evaluation of software used for an automatic analysis of the Winston-Lutz test in image guided radiation therapy, Tarraf J. Torfeh, Univ. de Nantes (France) and QualiFormeD SARL (France); Stéphane Beaumont, QualiFormeD SARL (France); David Bonnet, Univ. de Nantes (France); Yves Barbotteau, Univ. Montpellier I (France); Jean-Pierre V. Guédon, Nicolas C. Normand, Eloïse C. Denis, Univ. de Nantes (France); Pascal Fenoglietto, Norbert Ailleres, Univ. Montpellier I (France). . . . . .[6913-123]

A simulation framework for pre-clinical studies on dose and image quality: concept and first validation, Kristien Smans, Herman Pauwels, Frank Rogge, Univ. Ziekenhuizen Leuven (Belgium); Lare Struelens, SCK•CEN (Belgium); Octavian Dragusin, Univ. Ziekenhuizen Leuven (Belgium); Filip Vanhavere, SCK•CEN (Belgium); Hilde T. C.Bosmans, Univ. Ziekenhuizen Leuven (Belgium). .[6913-124]

Validation of a GEANT4 simulation of neutron stimulated emission computed tomography, Anuj J. Kapadia, Brian P. Harrawood, Georgia D. Tourassi, Duke Univ. Medical Ctr.. . . . . .[6913-125]

Use of the detective quantum efficiency in a quality assurance program, Ian A. Cunningham, Robarts Research Institute (Canada) . . . . . .[6913-126]

Radiation dose measurement for various parameters in MDCT, Chang-Lae Lee, Hee-Joung Kim, Yonsei Univ. (South Korea); Seong-Su Jeon, Wonju Christian Hospital (South Korea); Hyo-Min Cho, So-Ra Nam, Ji-Young Jung, Yonsei Univ. (South Korea) . . . . . .[6913-127]

Dosimetric measurements and comparison studies in digital imaging system, Ji-Young Jung, Hee-Joung Kim, Hyo-Min Cho, Chang-Lae Lee, So-Ra Nam, Yonsei Univ. (South Korea) . . . . .[6913-128]

Estimation of x-ray parameters in digital coronary angiography for compensation of myocardial perfusion measurements, Cornelis H. Slump, Univ. Twente (Netherlands); Corstiaan J. Storm, Ziekenhuis Walcheren (Netherlands). . . . . .[6913-129]

Computational method for automatic determination of radiographic equipment anode angle, Marcelo A. d. C.Vieira, Paulo D. d.Oliveira, Jr., Homero Schiabel, Univ. de São Paulo (Brazil) . . . . . .[6913-130]

Performance assessment of a simple and accurate grid alignment aid for portable chest imaging, Xiaohui Wang, Weidong Huang, David H. Foos, Michael K. Rogers, Carestream Health, Inc.. . . . . .[6913-131]

Comparison of MTFs in X-ray CT images between measured by current method and considered linearity in low contrast, Naotoshi Fujita, Nagoya Univ. (Japan); Katsuhiro Ichikawa, Kanazawa Univ. (Japan); Takanori Hara, Nakatsugawa Municipal General Hospital (Japan); Yoshie Kodera, Nagoya Univ. (Japan). . .[6913-133]

An analysis of Field II simulation, Lalehan Candemir, TÜBITAK (Turkey); Inci F. Cilesiz, Istanbul Teknik Univ. (Turkey) . . .[6913-134]

Experimental validation of a Monte Carlo-based kV x-ray projection model for the Varian linac-mounted cone-beam CT imaging system, Dimitrios Lazos, Damodar Pokhrel, Zhong Su, Jun Lu, Jeffrey F. Williamson, Virginia Commonwealth Univ. . . . . .[6913-135]

Detector Technology

High resolution amplified pixel sensor architecture for large area digital mammography tomosynthesis, Farhad Taghibakhsh, Simon Fraser Univ. (Canada); Karim S. Karim, Univ. of Waterloo (Canada) [6913-136]

Photodiode forward bias to reduce temporal effects in a-Si-based flat panel detectors, Ivan Mollov, Carlo A. Tognina, Richard E. Colbeth, Varian Medical Systems, Inc.. . . . . .[6913-137]

Distortion, orientation and translation corrections of tiled EMCCD detectors for the new solid state x-ray image intensifier (SSXII), Hidab M. Hamwi, Kenneth R. Hoffmann, Stephen Rudin, Aleksandr Verevkin, Christos M. Keleshis, Joseph W. Lee, Univ. at Buffalo .[6913-138]

Modeling of dark current and ghosting in multilayer amorphous selenium x-ray detectors, M. Zahangir Kabir, Shaikh A. Mahmood, Farzin Manouchehri, Vijaya K. Devabhaktuni, Concordia Univ. (Canada); Olivier Tousignant, Marc Hansroul, Jonathan Leboeuf, Philippe Gauthier, Anrad Corp. (Canada) . . . . . .[6913-139]

The study of I-V response characterization about top-electrode type on mercury-iodide(HgI2) film for application of x-ray image detectors, Chol Kwon, Seung-Uk Heo, Chiwon Choi, Inje Univ. (South Korea); YunChang Kim, Inha Univ. (South Korea); Byung Youl Cha, Sangsik Kang, Sanghee Nam, Inje Univ. (South Korea). . . . . .[6913-140]

The study of multilayer for increasing semiconductor efficiency by decreasing dark current with oxidized substance for x-ray imaging, Daewoong Son, Sangsik Kang, SungHo Jo, Chiwon Choi, MinSek Yoon, Minwoo Kim, Sanghee Nam, Inje Univ. (South Korea) . . . . . .[6913-141]

X-ray detector using liquid crystal modulator, Seung-Uk Heo, Sangsik Kang, Byung Youl Cha, Sungho Cho, Soyoung Kim, Chol Kwon, Sanghee Nam, Inje Univ. (South Korea). . . . . .[6913-142]

X-ray properties measurement of flat panel gas detector, Min-seok Yun, Inje Univ. (South Korea) . . . . . .[6913-143]

Small Animal and Non x-ray Imaging

Soft tissue small avascular tumor imaging with x-ray phase-contrast micro-CT in in-line holography setup, Yakov I. Nesterets, Timur E. Gureyev, Andrew W. Stevenson, Andrew Pogany, Stephen W. Wilkins, Commonwealth Scientific and Industrial Research Organisation (Australia); Russell E. Kincaid, Hongwei Ye, Levon Vogelsang, Edward D. Lipson, Syracuse Univ.; Ioana L. Coman, Upstate Medical Univ./SUNY; Sylvain Fourmaux, Jean-Claude Kieffer, Institut National de la Recherche Scientifique (Canada); Andrzej Krol, Upstate Medical Univ./SUNY. . . . . .[6913-144]

A predictive software tool for optimal timing in contrast enhanced carotid MR angiography, Abbas N. Moghaddam, David Geffen School of Medicine at UCLA and California Institute of Technology; Tariq Balawi, Reza Habibi, David Geffen School of Medicine at UCLA; Christoph Panknin, Gerhard Laub, Siemens Medical Solutions, Inc.; Stefan G. Ruehm, Paul Finn M.D., David Geffen School of Medicine at UCLA. . . . . .[6913-145]

A feasibility study of the 3D fluorescent image reconstruction for the simultaneous PET and fluorescent CT imaging system using depth of interaction PET detector, Hideaki Tashima, Takashi Obi, Tokyo Institute of Technology (Japan); Taiga Yamaya, Hideo Murayama, National Institute of Radiological Sciences (Japan); Keishi Kitamura, Ichiro Oda, Shimadzu Corp. (Japan); Masahiro Yamaguchi, Nagaaki Ohyama, Tokyo Institute of Technology (Japan) . .[6913-146]

A dual micro-CT system for small animal imaging, Cristian T. Badea, Samuel Johnston, Brice Johnson, Ming-De Lin, Laurence W. Hedlund, G. Allan Johnson, Duke Univ. Medical Ctr. . . . . .[6913-147]

CT number variations in micro CT imaging systems, Shu-Ju Tu, Hui-Ling Hsieh, Tsi-Chian Chao, Chang Gung Univ. (Taiwan) . . . . . .[6913-148]

Contrast imaging with a monochromatic x-ray system, Donald J. Pole, Kosta Popovic, Mark B. Williams, Univ. of Virginia. . . . . .[6913-149]

Noise evaluations of accurate image reconstructions for a dual-head small-animal PET scanner, Chien-Min Kao, The Univ. of Chicago; Yun Dong, Illinois Institute of Technology; Qingguo Xie, The Univ. of Chicago . . . . . .[6913-150]

Ordered k-space acquisition in contrast enhanced magnetic resonance angiography (CE-MRA), Bing Wu, Julian R. Maclaren, Rick P. Millane, Richard Watts, Philip J. Bones, Univ. of Canterbury (New Zealand). . . . . .[6913-152]

Development of an MR compatible rotating anode x-ray tube, Prasheel Lillaney, Stanford Univ. School of Medicine and Stanford Univ.; John Bracken, Sunnybrook Health Sciences Ctr. (Canada); Arundhuti Ganguly, Rebecca A. Fahrig, Stanford Univ. School of Medicine; John A. Rowlands, Sunnybrook Health Sciences Ctr. (Canada) . . . . . .[6913-153]

Parameter optimization for a grating-based phase contrast x-ray system, Bonsung Koo, Christopher L. Wyatt, Virginia Polytechnic Institute and State Univ.; Ming Jiang, Peking Univ. (China); Ge Wang, Virginia Polytechnic Institute and State Univ. . . . . .[6913-154]

A numerical analysis of the Born approximation for image formation modeling of differential interference contrast microscopy for human embryos, Sigal Trattner, Micha Feigin, Hayit Greenspan, Nir Sochen, Tel Aviv Univ. (Israel) . . . . . .[6913-155]

A study of respiratory motion effects affecting PET/CT reconstruction for lung cancer diagnosis, Lu Wan, Zhijian Wu, Fengyin Zhou, Sheng Ye, Shaoqun Zeng, Huazhong Univ. of Science and Technology (China); Chien-Min Kao, Chin-Tu Chen, The Univ. of Chicago; Yongxue Zhang, Huazhong Univ. of Science and Technology (China); Qingguo Xie, Huazhong Univ. of Science and Technology (China) and The Univ. of Chicago . . . . . .[6913-156]

An investigation of digital signal processing for shaped pulses for all-digital PET, Qingguo Xie, The Univ. of Chicago and Huazhong Univ. of Science and Technology (China); Jun Zhu, Xi Wang, Bo Zhang, Caigang Zhu, Hanni Yang, Zhi Zhang, Huazhong Univ. of Science and Technology (China); Chin-Tu Chen, Yau Wai Wah, Mircea Bogdan, Chien-Min Kao, The Univ. of Chicago . . . . . .[6913-157]

Evaluation of the partial flip angle spin echo method to improve non-uniformity in T1-weighted imaging with the 3-tesla MRI, Youhei Watanabe, Masatoshi Tsuzaka, Kazuto Ishibashi, Yasuo Sakurai, Nagoya Univ. (Japan) . . . . . .[6913-158]

Motion gated small animal imaging with a flat-panel CT, Michael Grasruck, Siemens Medical Solutions (Germany); Soenke Barting, Julien Dinkel, Fabian Kiessling, Deutsches Krebsforschungszentrum (Germany); Christoph Suess, Bernhard T. Schmidt, Siemens Medical Solutions (Germany) . . . . . .[6913-159]

Breast Imaging

Frequency diversity in breast ultrasound tomography, Francesco Simonetti, Imperial College London (United Kingdom); Lianjie Huang, Los Alamos National Lab.; Nebojsa Duric, Karmanos Cancer Institute[6913-160]

Screen optics effects on DQE in digital radiography: spatial frequency effects, Anthony R. Lubinsky, Wei Zhao, Stony Brook Univ.; Katsuhiko Suzuki, Hamamatsu Photonics K.K. (Japan) . . . . . .[6913-161]

Non-circular scans and image reconstruction for breast CT, Junguo Bian, The Univ. of Chicago; Nathan J. Packard, Kai Yang, Univ. of California/Davis; Dan Xia, The Univ. of Chicago; John M. Boone, Univ. of California/Davis; Xiaolchuan Pan, The Univ. of Chicago. . . . . .[6913-162]

A multiple component geometric breast phantom, Karl G. Baum, Rochester Institute of Technology and KGB Technologies; Kevin McNamara, María Helguera, Rochester Institute of Technology . . . . . .[6913-163]

Impact of heel effect and ROI size on the determination of contrast-to-noise ratio for digital mammography systems, Abdulaziz Al Sager, Kenneth C. Young, The Royal Surrey County Hospital NHS Trust (United Kingdom) and Univ. of Surrey (United Kingdom); Jennifer M. Oduko, The Royal Surrey County Hospital NHS Trust (United Kingdom). . . . . .[6913-164]

Optimization of dose in digital breast tomosynthesis using breast specimens, Pontus Timberg, Mark E. Ruschin, Tony M. Svahn, Ingvar Andersson, Lunds Univ. (Sweden); Magnus Båth, Sahlgrenska Univ. Hospital (Sweden); Bengt Hemdal, Sören Mattsson, Anders Tingberg, Lunds Univ. (Sweden) . . . . . .[6913-165]

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Comparison of two algorithms in the automatic segmentation of blood vessels in fundus images, Robert W. LeAnder, Sushma C. Myneni, Swapnasri Mokkapati, Scott E. Umbaugh, Southern Illinois Univ. . . . . .[6915-125]

A new registration method with voxel matching technique for temporal subtraction image, Yoshinori Itai, Hyoungseop Kim, Seiji Ishikawa, Kyushu Institute of Technology (Japan); Shigehiko Katsuragawa, Kumamoto Univ. (Japan); Kunio Doi, The Univ. of Chicago .[6915-126]

An image-based retrieval system and a computer-aided diagnosis system for renal cortical scintigraphy images, Erkan U. Mumcuoglu, Fatih Nar, Middle East Technical Univ. (Turkey); Omer Ugur, Fani Bozkurt, Mehmet Aslan, Hacettepe Univ. Medical School (Turkey) . . . . . .[6915-127]

Handheld erythema and bruise detector, Linghua Kong, Stephen H. Sprigle, Mark G. Duckworth, Jayme J. Caspall, Dingrong Yi, Georgia Institute of Technology; Jiwu Wang, Futing Zhao, Bejing Film Mechanism Research Institute (China) . . . . . .[6915-128]

Glaucoma diagnosis by mapping macula with Fourier domain optical coherence tomography, Ou Tan, Ake T. Lu, Vik Chopra, Rohit Varma, Univ. of Southern California; Hiroshi Ishikawa, Joel S. Schuman M.D., Univ. of Pittsburgh Medical Ctr.; David Huang, Univ. of Southern California . . . . . .[6915-129]

Linear structure verification for medical imaging applications, Shoupu Chen, Yong Chu, Carestream Health, Inc.; Yang Zheng, Eastman Kodak Co. . . . . .[6915-130]

Conference 6917 Posters

Image Perception, Observer Performance, and Technology Assessment

VGC analysis: application of the ROC methodology to visual grading tasks, Magnus Båth, Sahlgrenska Univ. Hospital (Sweden) and Göteborg Univ. (Sweden); Sara Zachrisson, Göteborg Univ. (Sweden); Lars Gunnar Månsson, Sahlgrenska Univ. Hospital (Sweden) and Göteborg Univ. (Sweden) . . . . . .[6917-32]

A method of ROC analysis by applying item response theory (IRT) to results of 1/0 judgments on the presence or absence of abnormal findings in CT image readings, Toru Matsumoto, Akira Furukawa, Kanae Nisizawa, National Institute of Radiological Sciences (Japan); Kohei Murao, Fujitsu Ltd. (Japan); Shinji Yamamoto, Chukyo Univ. (Japan); Kozo Hanai, Tochigi National Hospital (Japan); Shinich Wada, Niigata Univ. (Japan). . . . . .[6917-33]

Relations between physical properties of local and global image-based elements and the performance of human observers in lung nodule detection, Mariusz Pietrzyk, Univ. of Cumbria (United Kingdom) and Lancaster Univ. (United Kingdom); David J. Manning, Univ. of Cumbria (United Kingdom); Alan Dix, Lancaster Univ. (United Kingdom); Tim Donovan, Univ. of Cumbria (United Kingdom) . . . . . .[6917-34]

Reconstruction filters and contrast detail curves in CT, Walter Huda, Medical Univ. of South Carolina; Kent M. Ogden, Ernest M. Scalzetti, SUNY Upstate Medical Univ.; Ehsan Samei, Duke Univ.; Robert L. Lavallee, Marsha L. Roskopf, Glenn E. Groat, SUNY Upstate Medical Univ. . . . . .[6917-35]

Inter-reader variability in alternate forced choice studies, Walter Huda, Medical Univ. of South Carolina; Kent M. Ogden, Ernest M. Scalzetti, SUNY Upstate Medical Univ.; Ehsan Samei, Duke Univ.; Robert L. Lavallee, Marsha L. Roskopf, SUNY Upstate Medical Univ.. . . . . .[6917-36]

Mammographic interpretation training: how useful is handheld technology?, Yan Chen, Alastair G. Gale, Hazel J. Scott, Loughborough Univ. (United Kingdom) . . . . . .[6917-37]

How are false negative cases perceived by mammographers? Which abnormalities are misinterpreted and which go undetected?, Hazel J. Scott, Alastair G. Gale, Sue Hill, Loughborough Univ. (United Kingdom) . . . . . .[6917-38]

Measurement of visual strain in radiologists, Elizabeth A. Krupinski, Adam Johns, The Univ. of Arizona; Kevin S. Berbaum, The Univ. of Iowa . . . . .[6917-39]

Learning from others: effects of viewing another person's eye movements while searching for chest nodules, Damien Litchfield, Linden Ball, Lancaster Univ. (United Kingdom); Tim Donovan, David J. Manning, Univ. of Cumbria (United Kingdom); Trevor Crawford, Lancaster Univ. (United Kingdom). . . . . .[6917-40]

Assembling a prototype resonance electrical impedance spectroscopy system for breast tissue signal detection: preliminary assessment, Jules Sumkin, Bin Zheng, Michele Gruss, John M. Drescher, Josoph K. Leader, Amy H. Lu, Cathy Cohen, Ratan Shah, Rita Zuley, David Gur, Univ. of Pittsburgh. . . . . .[6917-41]

Perceptual assessment of multiple stent deployment, Craig K. Abbey, Arian Teymoorian, Univ. of California/Santa Barbara; Xiaolin Da, Cedars-Sinai Medical Ctr.; Binh T. Pham, Univ. of California/Santa Barbara; James S. Whiting, Cedars Sinai Health System; Miguel P. Eckstein, Univ. of California/Santa Barbara . . . . . .[6917-42]

An automated system for the analysis of peri-prosthetic osteolysis progression, Jose G. Tamez-Pena, Monica Barbu-McInnis, Sait Kubilay Pakin, VirtualScopics, Inc.; Benjamin Castaneda, Univ. of Rochester; Saara M. Totterman, VirtualScopics, Inc.; John Looney, Univ. of Rochester . . . . . .[6917-43]

Performance assessment of multifrequency processing of ICU chest images for enhanced visualization of tubes and lines, Xiaohui Wang, Mary E. Couwenhoven, James Doran, David H. Foos, Carestream Health, Inc.. . . .[6917-44]

Steady-state sweep visual evoked potential processing denoised by wavelet transform, Heinar A. Weiderpass, Univ. de São Paulo (Brazil) and Santo André Foundation (Brazil); Marcelo N. Burattini, Univ. de São Paulo (Brazil); Jorge F. Yamamoto, Academic Network at São Paulo (Brazil); Solange R. Salomão, Adriana Berezovsky, Josenilson M. Pereira, Paula Y. Sacai, Univ. Federal de São Paulo (Brazil); José P. Oliveira, Márcio A. Costa, Univ. de São Paulo (Brazil) . . . . . .[6917-45]

A strategy to optimize CT pediatric dose with a visual discrimination model, Daniel F. Gutierrez, François Gudinchet, Leonor T. Alamo Maestre, François O. Bochud, Francis R. Verdun, Institut Univ. de Radiophysique Appliquée (Switzerland) . . . . . .[6917-46]

Assessment of scanning model observers with hybrid SPECT images, Howard C. Gifford, Petrus H. Pretorius, Michael A. King, Univ. of Massachusetts Medical School . . . . . .[6917-47]

SPECT image system optimization using ideal observer for detection and localization, Lili Zhou, Gene R. Gindi, Stony Brook Univ. . . . . .[6917-48]

Computerized observers for optimizing simulated x-ray imaging chain, Il-Young Son, Birsen Yazici, Rensselaer Polytechnic Institute . . . . . .[6917-49]

Noise reduction effect in super-high resolution LCDs using independent sub-pixel driving technology, Katsuhiro Ichikawa, Kanazawa Univ. (Japan); Yoshikazu Nishi, Shigeo Hayashi, Mikio Hasegawa, Totoku Electric Co., Ltd. (Japan); Yoshie Kodera, Nagoya Univ. (Japan). . . . . .[6917-50]

Mammography workstation design: reducing the risk of musculoskeletal disorders, Sian Taylor-Phillips, Loughborough Univ. (United Kingdom); Matthew Wallis, Univ. Hospitals Coventry and Warwickshire NHS Trust (United Kingdom); Alastair G. Gale, Loughborough Univ. (United Kingdom) . . . . . .[6917-51]

Influence of monitor characteristics on the signals detection present in the mammographic phantom image, Silvio R. Pires, Regina B. Medeiros, Univ. Federal de São Paulo (Brazil) . . . . . .[6917-52]

Radiological image presentation requires consideration of human adaptation characteristics, Niamh O'Connell, National Univ. of Ireland/Dublin (Ireland); Rachel J. Toomey, Mark F. McEntee, Univ. College Dublin (Ireland); John T. Ryan, Patrick C. Brennan, National Univ. of Ireland/Dublin (Ireland) . . . . . .[6917-53]

Searching in axial and 3D CT visualizations, Peter W.Phillips, David J. Manning, Univ. of Cumbria (United Kingdom); Trevor Crawford, Lancaster Univ. (United Kingdom); David Burling, St. Marks Hospital (United Kingdom); Chi-Leung Tam, Alasdair Taylor, Lancaster Royal Infirmary (United Kingdom). . . . . .[6917-54]

Conference 6919 Posters
PACS and Imaging Informatics

Content based image retrieval applied to contrast enhancing brain tumors, Hussain Z. Tameem, Shishir Dube, Usha Sinha, Univ. of California/Los Angeles . . . . . .[6919-10]

A novel multidimensional medical image display framework based on VTK, Jie Shuai, Jianyong Sun, Jianguo Zhang, Shanghai Institute of Technical Physics (China) . . . . . .[6919-37]

A novel strategy to access high resolution DICOM medical images based on JPEG2000 interactive protocol, Yuan Tian, Weihua Cai, Jianyong Sun, Jianguo Zhang, Shanghai Institute of Technical Physics (China) . . . . . .[6919-38]

Database construction for small lung nodule using high-resolution three-dimension CT image, Yoshihiko Kozaki, Yoshiki Kawata, Noboru Niki, The Univ. of Tokushima (Japan); Hironobu Ohmatsu, Masahiko Kusumoto, Ryutaro Kakinuma, National Cancer Ctr. Hospital East (Japan); Kenji Eguchi, Tokai Univ. School of Medicine (Japan); Masahiro Kaneko, Noriyuki Moriyama, National Cancer Ctr. Hospital East (Japan). . . . . .[6919-41]

Integration of a research CBIR system into radiological routine, Thomas M. Deserno, Ilja Bezrukov, Benedikt Fischer, Bastian Ott, Henning Schubert, RWTH Aachen (Germany). . . . . .[6919-42]

Development of a mobile HIS/PACS workstation to assist critical cardiac patients in an intensive care unit, Marco A. Gutierrez, Idagene A. Cestari, Gina Hamamoto, Simao Bacht, Marina d. S.Rebelo, Joao E. M.Silva, Instituto do Coracão do Hospital das Clínicas (Brazil) . . . . . .[6919-43]

Computer-aided diagnosis workstation and network system for chest diagnosis based on multislice CT images, Hitoshi Satoh, Tokyo Health Care Univ. (Japan). . . . . .[6919-44]

Using Eclipse RCP for the contextual image viewer, Ramon A. Moreno, Sérgio S. Furuie, Instituto do Coracão do Hospital das Clínicas (Brazil) . . . . . .[6919-45]

Bone age assessment in Hispanic and Asian children: digital hand atlas versus the Greulich and Pyle (G&P) atlas, James Reza F. Fernandez, Aifeng Zhang, Sinchai Tsao, Univ. of Southern California [6919-46]

See pp. 14–29 for the Sunday/ Monday Poster Presentations

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 12
Room: Town & Country . . . Thurs. 8:00 to 9:40 am

CT System Models

Session Chair: **Norbert J. Pelc,** Stanford Univ.

8:00 am: **Analysis of image noise in 3D cone-beam CT: spatial and Fourier domain approaches under conditions of varying stationarity**, Angel R. Pineda, California State Univ./Fullerton; Jeffrey H. Siewerdsen, Princess Margaret Hospital (Canada); Daniel J. Tward, Univ. of Toronto (Canada) . . . . . [6913-61]

8:20 am: **Spectral analysis of scattered radiation in CT**, Klaus-Jürgen Engel, Christian Bäumer, Jens Wiegert, Günter Zeitler, Philips Research Europe Aachen (Germany). . . . . [6913-62]

8:40 am: **Cascaded systems analysis of the 3D NEQ for cone-beam CT and tomosynthesis**, Daniel J. Tward, Univ. of Toronto (Canada); Jeffrey H. Siewerdsen, Princess Margaret Hospital (Canada) and Univ. of Toronto (Canada); Rebecca A. Fahrig, Stanford Univ.; Angel R. Pineda, California State Univ./ Fullerton. . . . . [6913-63]

9:00 am: **Hadamard multiplexing radiography based on carbon nanotube field emission multipixel x-ray technology**, Jian Zhang, Guang Yang, Sha Chang, Jianping Lu, Otto Zhou, The Univ. of North Carolina at Chapel Hill . . . . . [6913-64]

9:20 am: **Propagation of quantum noise in multiplexed x-ray imaging**, Bruno De Man, GE Global Research; Norbert J. Pelc, Stanford Univ.; Tsuri Bernstein, GE Healthcare . . . . . [6913-65]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

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

Lung Analysis

Session Chair: **Rafael Wiemker,** Philips Research Labs. (Germany)

8:00 am: **Human airway measurement from CT images**, Jaesung Lee, Anthony P. Reeves, Sergei V. Fotin, Tatiyana V. Apanasovich, Cornell Univ.; David F. Yankelevitz M.D., Cornell Medical Ctr. . . . . [6915-43]

8:20 am: **Computer-aided detection of endobronchial valves**, Robert A. Ochs, Jonathan G. Goldin, Fereidoun G. Abtin, Shama Ahmad, Zeenia Irani, Irene da Costa, Matthew S. Brown, Univ. of California/Los Angeles . . . . . [6915-44]

8:40 am: **Computerized scheme for detection of diffuse lung diseases on CR chest images**, Roberto R. Pereira, Jr., Junji Shiraishi, Feng Li, Qiang Li, Kunio Doi, The Univ. of Chicago . . . . . [6915-45]

9:00 am: **Extraction and visualization of the central chest lymph node stations**, William E. Higgins, Kongkuo Lu, The Pennsylvania State Univ. . . [6915-46]

9:20 am: **(ST) Reduction of lymph tissue false positives in pulmonary embolism detection**, Bernard S. Ghanem, Jianming Liang, Jinbo Bi, Marcos Salganicoff, Arun Krishnan, Siemens Medical Solutions USA, Inc. . . . . [6915-47]

9:30 am: **(ST) Feasibility of quantitative lung perfusion by 4D CT imaging by a new dynamic-scanning protocol in an animal model**, Yang Wang, Jonathan G. Goldin, Fereidoun G. Abtin, Matthew S. Brown, Michael F. McNitt-Gray, Univ. of California/Los Angeles . . . . . [6915-48]

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

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Conference 6917 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

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

Image Display

Session Chair: **David J. Manning,** Univ. of Cumbria (United Kingdom)

8:00 am: **Image splitting techniques for a dual layer high dynamic range LCD display**, Gabriele Guarnieri, Univ. degli Studi di Trieste (Italy); Luigi Albani, FIMI Philips (Italy); Giovanni Ramponi, Univ. degli Studi di Trieste (Italy) . . . . . [6917-21]

8:20 am: **Detection of low contrast test patterns on an LCD with different luminance and illuminance settings**, Patrik Sund, Magnus Båth, Linda Ungsten, Lars Gunnar Månsson, Sahlgrenska Univ. Hospital (Sweden) . . . . . [6917-22]

8:40 am: **Visual adaptation: softcopy image contribution to the observer's field of view**, Rachel J. Toomey, Kathleen Curran, Catherine D'Helft, Maria B. Joyce, John Stowe, John T. Ryan, Mark F. McEntee, Univ. College Dublin (Ireland); David J. Manning, St. Martin's Colllege Lancaster (United Kingdom); Patrick C. Brennan, Univ. College Dublin (Ireland). . . . . [6917-23]

9:00 am: **Achieving consistent color and consistent grayscale presentation for digital color displays in medical imaging**, Hans Roehrig, The Univ. of Arizona; Jiahua Fan, GE Healthcare; William J. Dallas, The Univ. of Arizona . . . . . [6917-24]

9:20 am: **A model observer for the assessment of display temporal characteristics**, Hongye Liang, Aldo Badano, U.S. Food and Drug Administration . [6917-25]

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

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Conference 6919 continued
PACS and Imaging Informatics
Room: California

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

Systems Integration and Infrastructure

Session Chair: **Janice C. Honeyman-Buck,** Univ. of Florida

8:00 am: **An adaptable XML-based approach for scientific data management and integration**, Fusheng Wang, Siemens Corporate Research; Florian Thiel, Freie Univ. Berlin (Germany); Daniel Furrer, ETH Zürich (Switzerland); Cristobal Vergara-Niedermayr, Freie Univ. Berlin (Germany); Chen Qin, Peking Univ. (China); Georg Hackenberg, RWTH Aachen (Germany); Pierre-Emmanuel Bourgue, LogicaCMG (France); David Kaltschmidt, Freie Univ. Berlin (Germany); Mo Wang, Univ. of Duisburg-Essen (Germany) . . . . . [6919-21]

8:20 am: **Design and implementation of GRID-based PACS in a hospital with multiple imaging departments**, Jianguo Zhang, Yuanyuan Yang, Jianyong Sun, Jin Jin, Shanghai Institute of Technical Physics (China); Jie Feng, Huadong Hospital (China) . . . . . [6919-22]

8:40 am: **Implementation and use of a web-based interface for confidential communication of data between the clinical and research environments**, Peyton H. Bland, Gary E. Laderach, Charles R. Meyer, Univ. of Michigan Health System . . . . . [6919-23]

9:00 am: **Performance benchmarking of liver CT image segmentation and volume estimation**, Wei Xiong, Institute for Infocomm Research (Singapore); Jiayin Zhou, Nanyang Technological Univ. (Singapore); Qi Tian, Jiang Liu, Institute for Infocomm Research (Singapore); Yingyi Qi, Wee-Keng Leow, Thazin Han, Shih-Chang Wang, National Univ. of Singapore (Singapore) . . . . . [6919-24]

9:20 am: **Assuring image authenticity within a data grid using digital signature embedding and a HIPAA-compliant auditing system**, Jasper Lee, Jorge R. Documet, Bing Guo, Tony Mo, Brent J. Liu, Univ. of Southern California . . . . . [6919-25]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 13
Room: Town & Country. . . . . Thurs. 10:10 am to 12:10 pm

Systems and Corrections
Session Chair: **Thomas J. Flohr,** Science Applications International Corp.

10:10 am: **A simple motion tracking backprojection for a class of affine transformation**, Katsuyuki Taguchi, Johns Hopkins Univ.; Hiroyuki Kudo, Univ. of Tsukuba (Japan) . . . . . [6913-66]

10:30 am: **Correction of cross-scatter in next generation dual source CT scanners**, Herbert K. Bruder, Karl Stierstorfer, Martin Petersilka, Christoph Suess, Siemens Medical Solutions (Germany) [6913-67]

10:50 am: **Cardiac CT artifact mitigation through decomposition-based image reconstruction**, Zhuangli Liang, Boston Univ.; Synho Do, Massachusetts General Hospital; W. Clem Karl, Boston Univ.; Thomas J. Brady, Homer H. Pien, Massachusetts General Hospital . . . . . [6913-68]

11:10 am: **Monte-Carlo scatter correction for cone-beam computed tomography with limited scan field-of-view**, Matthias Bertram, Timo Sattel, Steffen Hohmann, Jens Wiegert, Philips Research Europe Aachen (Germany). . . . . [6913-69]

11:30 am: **Influence of imaging geometry on noise texture in x-ray in-line phase-contrast imaging**, Cheng-Ying Chou, National Taiwan Univ. (Taiwan); Mark A. Anastasio, Illinois Institute of Technology. . [6913-70]

11:50 am: **Temporal modulation transfer function of fluoroscopic systems: small-signal vs large-signal approaches**, Saul N. Friedman, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada); Ian A. Cunningham, Robarts Research Institute (Canada) and Univ. of Western Ontario (Canada) and London Health Sciences Ctr. (Canada) . . . . . [6913-71]

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

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Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 10
Room: Golden West . Thurs. 10:10 am to 12:10 pm

Lung Nodules
Session Chair: **Mary S. Pastel,** U.S. Food and Drug Administration

10:10 am: **Characterization of pulmonary nodules: effects of size and feature type on reported performance**, Artit C. Jirapatnakukl, Anthony P. Reeves, Alberto M. Biancardi, Tatiyana V. Apanasovich, Cornell Univ.; David F. Yankelevitz M.D., Claudia I. Henschke, Cornell Medical Ctr.. . . . . [6915-49]

10:30 am: **Use of random process-based fractal measure for characterization nodules and suspicious regions in lung**, Mausumi Acharyya, Siemens Information Systems Ltd. (India); Sumit Chakravarty, Univ. of Maryland/Baltimore County; Jonathan Stoeckel, Siemens Israel Ltd. (Israel) [6915-50]

10:50 am: **The impact of pulmonary nodule size estimation accuracy on the measured performance of automated nodule detection systems**, Sergei V. Fotin, Anthony P. Reeves, Cornell Univ.; Claudia I. Henschke, David F. Yankelevitz, Weill Cornell Medical College . . . . . [6915-51]

11:10 am: **Computer-aided diagnosis: a 3D segmentation method for lung nodules in CT images by use of a spiral-scanning technique**, Jiahui Wang, Roger M. Engelmann, Qiang Li, The Univ. of Chicago . . . . . [6915-52]

11:30 am: **Comparison of computer-aided diagnosis performance and radiologist readings on LIDC pulmonary nodule dataset**, Luyin Zhao, Michael C. Lee, Lilla Boroczky, Victor Vloemans, Philips Research North America; Roland Opfer, Philips Research Europe Hamburg (Germany) . . . . . [6915-53]

11:50 am: **Characteristics of suspicious features in CT lung-cancer screening images**, Philip F. Judy, Brigham and Women's Hospital; Yoshiko Kanasaki, Tottori Univ. (Japan); Francine L. Jacobson, Brigham and Women's Hospital; Chiara Del Frate, Univ. degli Studi di Udine (Italy) . . . . . [6915-54]

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

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Conference 6917 continued
Image Perception, Observer Performance, and Technology Assessment
Room: San Diego

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

Model Observers
Session Chair: **Matthew A. Kupinski,** College of Optical Sciences/The Univ. of Arizona

10:10 am: **Model observers to predict human performance in LROC studies of SPECT reconstruction using anatomical priors**, Andre Lehovich, Howard C. Gifford, Michael A. King, Univ. of Massachusetts Medical School . . . . . [6917-26]

10:30 am: **Optimizing breast-tomosynthesis acquisition parameters with scanning model observers**, Howard C. Gifford, Univ. of Massachusetts Medical School; Clay S. Didier, Univ. of Massachusetts Medical School and Univ. of Massachusetts/Lowell; Mini Das, Stephen J. Glick, Univ. of Massachusetts Medical School . . . . . [6917-27]

10:50 am: **Markov-chain Monte Carlo for the performance of a channelized-ideal observer in detection tasks with non-Gaussian lumpy backgrounds**, Subok Park, U.S. Food and Drug Administration; Eric W. Clarkson, The Univ. of Arizona. . . . . [6917-28]

11:10 am: **Singular vectors of an imaging sytem matrix as efficient channels for the ideal observer in detection tasks involving non-Gaussian distributed lumpy images**, Joel M. Witten, Univ. of Maryland/ College Park and U.S. Food and Drug Administration; Subok Park, Kyle J. Myers, U.S. Food and Drug Administration . . . . . [6917-29]

11:30 am: **Comparison of variable and fixed focal length cone beam CT in diagnostic imaging**, Samuel J. LaRoque, Junguo Bian, Emil Y. Sidky, Xiaochuan M. Pan, The Univ. of Chicago. . . . . [6917-30]

11:50 am: **Cone-beam CT image reconstruction with a straight-line trajectory optimized on a SKE/BKE detection task**, Emil Y. Sidky, Samuel J. LaRoque, Xiaochuan M. Pan, The Univ. of Chicago . . . . [6917-31]

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

WORKSHOP
Recent Developments in ROC Analysis
San Diego Room · Thurs. 1:20 to 3:00 pm
Chair: **Keven S. Berbaum,** Univ. of Iowa; **Berkman Sahiner,** Univ. of Michigan

Conference 6919 continued
PACS and Imaging Informatics
Room: California

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

Displays, Visualization, Interpretation
Session Chair: **William W. Boonn,** Univ. of Pennsylvania

10:10 am: **Improved display calibration algorithm for wide viewing angle DICOM GSDF compliance**, Tom R. L.Kimpe, Cédric Marchessoux, Barco N.V. (Belgium) . . . . . [6919-26]

10:30 am: **Display methods for adjustable grayscale and luminance depth**, An Xu, Anindita Saha, U.S. Food and Drug Administration; Gabriele Guarnieri, Giovanni Ramponi, Univ. degli Studi di Trieste (Italy); Aldo Badano, U.S. Food and Drug Administration . [6919-27]

10:50 am: **The effect of increased ambient lighting on detection accuracy in uniform and anatomical backgrounds**, Benjamin J. Pollard, Amarpreet S. Chawla, Ehsan Samei, Duke Univ. . . . . [6919-28]

11:10 am: **Rapid prototyping of clinical software assistants**, Jan Rexilius, Heinz-Otto Peitgen, MeVis Research GmbH (Germany) . . . . . [6919-29]

11:30 am: **ImTK: an open source multi-center information management toolkit**, Adil Alaoui, Mary Lou Ingeholm, Shilpa Padh, Mihai Dorobantu, Mihir Desai, Kevin R. Cleary, Seong K. Mun, Georgetown Univ. . . . . [6919-30]

11:50 am: **The workflow and procedures for automatic integration of a computer-aided diagnosis workstation with a clinical PACS with real world examples**, Anh H. T.Le, Univ. of Southern California . . . . . [6919-31]

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

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Conference 6913 continued
Physics of Medical Imaging
Room: Town & Country

SESSION 14
Room: Town & Country. . . Thurs. 1:20 to 3:00 pm

Tomographic Reconstruction

Session Chair: **Jeffrey A. Fessler,** Univ. of Michigan

1:20 pm: **Exact and approximate cone-beam reconstruction algorithms for C-arm based cone-beam CT using a two-concentric-arc source trajectory**, Ting-Liang Zhuang, Joseph N. Zambelli, Brian E. Nett, Shuai Leng, Guang-Hong Chen, Univ. of Wisconsin/Madison . . . . . [6913-72]

1:40 pm: **Three-dimensional iterative full scan and half scan reconstruction in CT architectures with distributed sources**, Maria Iatrou, Bruno De Man, Dirk Beque, Thomas Benson, Kedar B. Khare, Zhye Yin, GE Global Research . . . . . [6913-73]

2:00 pm: **A Fourier rebinning algorithm for cone-beam CT**, Samuel R. Mazin, Norbert J. Pelc, Stanford Univ. . . . . [6913-74]

2:20 pm: **Image reconstruction from undersampled radial acquisition using compressed sensing with various penalty functions**, Julia V. Velikina, Brian E. Nett, Shuai Leng, Yijing Wu, Orhan Unal, Guang-Hong Chen, Univ. of Wisconsin/Madison . . . . . [6913-75]

2:40 pm: **Intensity-weighted region-of-interest imaging in cone-beam CT**, Seungryong Cho, Erik Pearson, Dan Xia, Xiao Han, Charles A. Pelizzari, Xiaochuan M. Pan, The Univ. of Chicago . . . . [6913-76]

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

SESSION 15
Room: Town & Country. . . Thurs. 3:30 to 5:30 pm

Algorithms and Reconstructions

Session Chair: **Katsuyuki Taguchi,** Johns Hopkins Univ.

3:30 pm: **An acquisition and image reconstruction scheme for reduced x-ray exposure dynamic 3D CTA**, Mark P. Supanich, Howard A. Rowley, Auilla S. Turk, Michael A. Speidel, Kari Pulfer, Univ. of Wisconsin/Madison; Jiang Hsieh, GE Healthcare; Guang-Hong Chen, Charles A. Mistretta, Univ. of Wisconsin/Madison. . . . . [6913-77]

3:50 pm: **Region-of-interest image reconstruction in x-ray differential phase-contrast tomography**, Mark A. Anastasio, Illinois Institute of Technology; Xiaochuan M. Pan, The Univ. of Chicago . . . . . [6913-78]

4:10 pm: **Practical iterative image reconstruction in digital breast tomosynthesis by non-convex TpV optimization**, Emil Y. Sidky, Ingrid S. Reiser, Robert M. Nishikawa, Xiaochuan M. Pan, The Univ. of Chicago; Rick Chartrand, Los Alamos National Lab.; Daniel B. Kopans, Richard H. Moore, Massachusetts General Hospital . . . . . [6913-79]

4:30 pm: **Sinogram smoothing with bilateral filtering for low-dose CT**, Lifeng Yu, Armando Manduca, Joshua D. Trzasko, Natalia Khaylova, James M. Kofler, Cynthia H. McCollough, Joel G. Fletcher, Mayo Clinic College of Medicine. . . . . [6913-80]

4:50 pm: **Tomosynthesis with source positions distributed over a surface**, Dan Xia, Junguo Bian, Emil Y. Sidky, Charles A. Pelizzari, Xiaochuan M. Pan, The Univ. of Chicago . . . . . [6913-81]

5:10 pm: **Iterative scatter correction based on artifact assessment**, Jens Wiegert, Steffen Hohmann, Matthias Bertram, Philips Research Europe Aachen (Germany) . . . . . [6913-82]

Conference 6915 continued
Computer-Aided Diagnosis
Room: Golden West

SESSION 11
Room: Golden West . . . . . Thurs. 1:20 to 3:00 pm

Mammogram Analysis

Session Chairs: **Maryellen L. Giger,** The Univ. of Chicago; **Nico Karssemeijer,** Radboud Univ. Nijmegen Medical Ctr. (Netherlands)

1:20 pm: **Incorporating ensemble techniques in a knowledge-based CAD system: application in mammography**, Maciej A. Mazurowski, Jacek M. Zurada, Univ. of Louisville; Georgia D. Tourassi, Duke Univ. . . . . [6915-55]

1:40 pm: **Correlative feature analysis of FFDM images**, Yading Yuan, Maryellen L. Giger, Hui Li, Charlene A. Sennett, The Univ. of Chicago. . . [6915-56]

2:00 pm: **Matching mammographic regions in mediolateral oblique and cranio-caudal views: a probabilistic approach**, Maurice R. Samulski, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [6915-57]

2:20 pm: **Concordance of computer-extracted image features with BI-RADS descriptors for mammographic mass margin**, Berkman Sahiner, Lubomir M. Hadjiiski, Heang-Ping Chan, Chintana Paramagul, Alexis Nees, Mark A. Helvie, Jiazheng Shi, Univ. of Michigan. . . . . [6915-58]

2:40 pm: **The effect of training with SFM images in a FFDM-CAD system**, Michiel G.Kallenberg, Nico Karssemeijer, Radboud Univ. Nijmegen Medical Ctr. (Netherlands) . . . . . [6915-59]

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

WORKSHOP

Critical Issues in Adapting CAD into Clinical Practice

Golden West Room · Thurs. 3:30 to 5:00 pm

Chair: **Robert M. Nishikawa,** The Univ. of Chicago

Conference 6919 continued
PACS and Imaging Informatics
Room: California

SESSION 7
Room: California . . . . . Thurs. 1:20 to 3:00 pm

Surgical PACS

Session Chair: **Heinz U. Lemke,** Computer Assisted Radiology and Surgery (Germany)

1:20 pm: **Integration of implant planning workflows into the PACS infrastructure**, Michael Gessat, Univ. Leipzig (Germany); Gero Strauss M.D., Univ. Hospital Leipzig (Germany); Oliver Burgert, Univ. Leipzig (Germany) . . . . . [6919-32]

1:40 pm: **A general framework for data streaming in the digital operating room**, Rafael Mayoral, Adrian Vazquez, Oliver Burgert, Univ. Leipzig (Germany) . . . . . [6919-33]

2:00 pm: **Automatic real-time capture and segmentation of endoscopy video**, Sean R. Stanek, Wallapak Tavanapong, Johnny S. Wong, Iowa State Univ.; Junghwan Oh, The Univ. of Texas M.D. Anderson Cancer Ctr.; Piet C. de Groen M.D., Mayo Clinic . . . . . [6919-34]

2:20 pm: **Workflow in interventional radiology: uterine fibroid embolization (UFE)**, David Lindisch, Georgetown Univ.; Thomas Neumuth, Oliver Burgert, Univ. Leipzig (Germany); Kevin R. Cleary, Georgetown Univ. . . . . [6919-35]

2:40 pm: **Integration of a real-time video capture component to the open source image-guided surgery toolkit IGSTK**, Ole Vegard Solberg, SINTEF (Norway) and Norwegian Univ. of Science and Technology (Norway) and National Ctr. for 3D Ultrasound in Surgery (Norway); Geir Arne Tangen, Frank Lindseth, Torleif Sandnes, SINTEF (Norway) and National Ctr. for 3D Ultrasound in Surgery (Norway); Andinet Enquobahrie, Cornell Univ.; Luis Ibáñez, Kitware, Inc.; Peng Cheng, Georgetown Univ.; David G. Gobbi, Atamai, Inc. (Canada); Kevin R. Cleary, Georgetown Univ. Medical Ctr. . . . . [6919-36]

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

SPECIAL SESSION

The Radiologist

Thurs. 3:30 to 5:30 pm

Katherine P. Andriole, Brigham & Women's Hospital/ Harvard Medical School

What Radiologists Do and Why

Steven C. Horii, Univ. of Pennsylvania;
Khan M. Siddiqui, VA Maryland Health Care System

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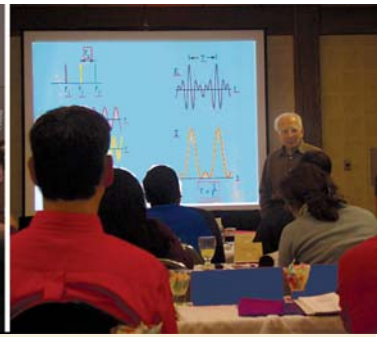

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CEU .00 $100 / $150 USD
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Monte Carlo Simulation of Radiation Imaging Systems SC771
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Sunday 8:30 am to 12:30 pm

Statistical Methods in Medical Imaging and Bioengineering with Applications to Observer Performance Evaluation SC613
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Principles and Advancements in X-ray Computed Tomography SC471
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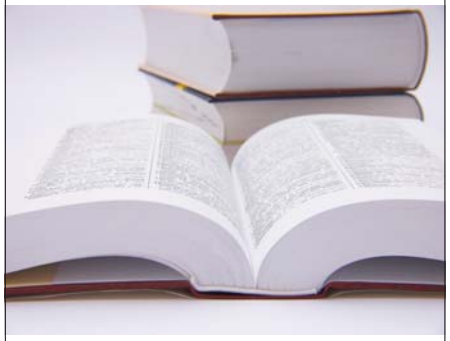

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SPIE Medical Imaging

Conferences: 17–21 February 2008
Courses: 16–19 February 2008
Exhibition: 18–20 February 2008

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

SPIE Medical Imaging Symposium will be held at the Town and Country Resort & Convention Center, 500 Hotel Circle North, San Diego, CA 92108.

Registration

Onsite Registration Hours

Golden Pacific Foyer

Saturday 16 February . . . . . 7:30 am to 4:00 pm
Sunday 17 February . . . . . 7:15 am to 5:00 pm
Monday 18 February . . . . . 7:30 am to 4:00 pm
Tuesday 19 February. . . . . 7:30 am to 4:00 pm
Wednesday 20 February . . . . . 7:30 am to 4:00 pm
Thursday 21 February . . . . . 7:30 am to 1:30 pm

Course Materials Desk

Located at the SPIE Registration Desk

Open during Registration hours

If you have registered to attend a course, please stop by the Registration Desk AFTER you pick up your badge. Your badge kit will include a course ticket allowing you to obtain your course notes.

Exhibit Hours

Golden Pacific Foyer

Monday 18 February . . . . . 5:00 am to 6:30 pm
Tuesday 19 February. . . . . 9:30 am to Noon; 1:00 to 4:00 pm
Wednesday 20 February . . . . . 9:30 am to Noon; 1:00 to 4:00 pm

Admission to the Exhibition

Admission is included in your conference, course or workshop fees. Or register to attend only the exhibition. Use the exhibit visitor registration form to register to attend the Medical Imaging 2008 Exhibition. Exhibition visitor registration is complimentary.

SPIE Membership

SPIE members receive 15% off conference and course registration fees.

Add Digital Library subscriptions.

Choose an SPIE Digital Library subscription with your registration. Also available: Proceedings of SPIE and Symposium Proceedings on CD-ROM. Please see details on the registration form.

Proceedings and CD-ROMs as part of a registration include tax and shipping. Proceedings and CD-ROM's purchased separately do not include shipping or taxes. Please see details on the registration form.

Media/Press Representatives

For credentialed press and media representatives, please email contact information, title and organization to media@spie.org.

Onsite Services

SPIE Marketplace & Membership Services

Located in the Golden Pacific Foyer

The SPIE Marketplace is your source for the latest SPIE Press books, Proceedings, and Educational and Professional Development materials. You can become a member of SPIE, explore the Digital Library, and take home a souvenir.

Internet Pavilion

Terrace Salon I Room

Sunday . . . . . .Noon to 9:00 pm
Monday through Wednesday . . . . . 7:00 am to 9:00 pm
Thursday . . . . . 7:00 am to 1:30 pm

The Terrace Salon I Room will be equipped with 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.

Internet Wireless Access

Guest rooms at The San Diego Town and Country Resort & Convention Center are equipped with high speed wireless internet, available at a special discounted rate of $4.95 for 24 hours for attendees to the Medical Imaging Symposium. Laptops will need an appropriate wireless card and access is available in all guest room areas. Please contact internet call center at Ext. 1234 in order to get this discounted rate. You will need a credit card for this access. Note: WiFi service is not available in or near meeting rooms.

Properly secure your computer before accessing the Public Wireless network. Failure to do so may allow unauthorized access to your laptop.

Author/Presenter Information

SPIE Receipts, Badge Corrections, Cashier

Receipts - Preregistered attendees who did not receive a receipt prior to the meeting may obtain a new copy of their registration receipt onsite at the SPIE Registration Desk.

Badge Corrections - Attendees who need a correction to their badge information onsite may do so at the SPIE Registration Desk. Please have your badge removed from the badge holder, marked with your changes, and ready to hand to the attendant upon approaching the counter.

Cashier Station - If you are paying by cash or check as part of your onsite registration, wish to add a short course, workshop, or special event requiring payment, or have questions regarding your registration please see the onsite cashier at the Cashier station in the registration area.

Speaker Check In Desk / Audiovisual Preview Station

Terrace Salon III Room

Saturday through Thursday 16-21 February . . 7:30 am to 5:00 pm

SPIE will provide computers in all Medical Imaging conference rooms. Authors are required to check in at the Speakers Check In Room by 5pm of the day prior to presentation to submit oral presentations and confirm compatibility. Oral presentations are best presented in PowerPoint or Adobe Acrobat PDF formats. Presentations can be accepted on pen drive, CD, or directly from your laptop.

Sunday/Monday Poster Session

(Image Processing, Physiology, Function, and Structure from Medical Imaging; Visualization, Image-guided Procedures, and Modeling; Ultrasonic Imaging and Signal Processing)

Author Poster Set Up . . . . . Sunday from Noon to 1:30 pm

Sunday Poster Viewing . . . . . 1:30 pm to 9:00 pm

Monday Poster Viewing. . . . . 7:15 am to 4:00 pm

Poster area will be closed from 4:00 to 5:00 pm in preparation for poster reception.

Interactive Poster Reception, Monday . . . . . 5:00 pm to 6:30 pm

Authors will be in attendance to answer questions. Poster awards will be announced.

Extended Poster Viewing . . . . . 7:00 pm to 9:00 pm

Authors must remove their posters between 7:00 pm to 9:00 pm on Monday. Posters not removed will be discarded.

Tuesday/Wednesday Poster Session

(Physics of Medical Imaging; Computer-Aided Diagnosis, Image Perception, Observer Performance, and Technology Assessment; PACS and Imaging Informatics)

Author Poster Set Up . . . . . Tuesday beginning at 9:30 am

Tuesday Poster Viewing . . . . . 9: 40 am to 9:00 pm

Wednesday Poster Viewing. . . . . 7:30 am to 4:00 pm

Poster area will be closed from 4:00 to 5:30 pm in preparation for poster reception.

Interactive Poster Reception, Wednesda . . . . 5:30 pm to 7:00 pm

Authors will be in attendance to answer questions. Poster awards will be announced.

Extended Poster Viewing. . . . . 7:00 pm to 9:00 pm

Authors must remove their posters between 7:00 pm to 9:00 pm on Wednesday. Posters not removed will be discarded.

Papers not removed at the designated times will be considered UNWANTED and will be discarded. SPIE assumes no responsibility for posters left on the poster boards at the conclusion of poster sessions.

Business Services

Copy Center

Conference Center, End of 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.

SPIE Message Center

The SPIE Message Center telephone number is 619 908 5040. Messages will be taken during registration hours Saturday through Thursday. Please check the message board at the message center near SPIE registration daily to receive your messages.

Child Care

Marion's Childcare, email amy@hotelchildcare.com, within San Diego call (619) 303-4379, or 1-888-891-5029, www.hotelchildcare.com

SPIE does not imply an endorsement or recommendation of this service. It is provided on an "information only" basis for your further analysis and decision. Other services may be available.

Food and Beverage Services

Coffee Breaks

Coffee will be served at 9:30 am to 10:15 am; 3:40 pm to 4:00 pm each day. Please check the individual technical conference listings for exact time and location.

SPIE Hosted Lunches

SPIE hosted lunches will be served Sunday through Thursday from 12:10 pm to 1:00 pm poolside at the Tiki Pavilion. Should inclement weather prevent outdoor lunches, they will be served downstairs. 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.

Exhibitors and students may purchase 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.

Desserts

Desserts will be served in the Exhibition Hall, Golden Pacific Ballroom on Tuesday and Wednesday at 3:00 pm. Complimentary tickets for the dessert snacks will be included in the attendee registration packets.

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, short course or of posters presented. Each presenter being taped must file a signed written consent form. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their film or recording media. Consent forms are available at the SPIE Audiovisual Desk.

In the Exhibition Hall: For security and courtesy reasons, photographing or videotaping individual booths and displays in the exhibit hall is allowed ONLY with explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their film and to leave the exhibit hall.

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 Audiovisual 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.

Use of a personal laser pointer at an SPIE event represents user's acceptance of liability for use of a non-SPIE supplied laser pointer device. Misuse of any laser pointer could lead to eye damage. In California, it is a criminal misdemeanor to shine a laser pointer at individuals "who perceive they are at risk."

Underage Persons on Exhibition Floor

For safety and insurance reasons, no persons under the age of 16 will be allowed in the exhibition area during move-in and move-out. During open exhibition hours, only children over the age of 12 accompanied by an adult will be allowed in the exhibition area.

No Suitcasing Policy

Suitcasing is the act of soliciting business in the aisles during the exhibition or in other public spaces, including another company's booth or a hotel lobby.

Please note that while all meeting attendees are invited to the exhibition, any attendee who is observed to be soliciting business in the aisles or other public spaces, in another company's booth, or in violation of any portion of SPIE Exhibition Policy will be asked to leave immediately. Additional penalties may be applied. Please report any violations you may observe to show management.

Unsecured Items

Personal belongings such as briefcases, backpacks, coats, book bags, etc. should not be left unattended in meeting rooms or public areas. These items will be subject to removal by security upon discovery.

Travel Information

Parking

Discounted parking for hotel guests is $5.00 per day. Local guests pay $3.00 for the first hour, $2.00 each additional hour, not to exceed $8 per day.

Hertz Car Rental is the official car rental agency for this Symposium. To reserve a car, identify yourself as an Medical Imaging Conference attendee using the Hertz Meeting Code CV# 029B0011. Note: When booking from International Hertz locations, the CV # must be entered with the letters CV before the number, i.e. CV029B0011.

- In the United States call 1-800-654-2240.

Shuttles

Xpress Shuttle

Xpress Shuttle has offered Medical Imaging attendees a discounted rate of $9.00 each way from the San Diego Airport to the Town & Country Resort & Convention Center. Be sure to refer to Medical Imaging to receive this rate. Call Xpress Shuttle by dialing #50 on the courtesy phone marked "Transportation" in the baggage claim area and the receptionist will direct you to the "Shuttles for Hire" Island. The shuttle will pick you up within 10 minutes. Watch for the yellow & blue van. Cash or credit cards accepted by driver, but checks are not. You may also book in advance by calling Xpress Shuttle at 1-800-900-7433. The discount rate is not available with online booking. Watch for the yellow & blue van. Cash or credit cards accepted by driver, but checks are not. You may also book in advance by calling Xpress Shuttle at 1-800-900-7433. The discount rate is not available with online booking.

Cloud 9 Shuttle

Cloud 9 Shuttle runs 24 hours per day, seven days a week. At the airport, look for assistants dressed in blue shirts and khaki pants by the "Shuttles for Hire" Island. The assistants will call the shuttle for you. Otherwise you may call on the courtesy phone inside the baggage claim area to arrange for pickup. Information and reservations online are available at. Cash and credit cards accepted - no checks. To cancel a reservation, you must call Cloud9 to notify them to avoid a penalty fee. To book your return to the airport, call for reservations at least 24 hours in advance. Cloud 9 Shuttle recommends a pickup time of at least 2 hours prior to flight departure time. Shuttle stops enroute to load/unload passengers. For additional information call 1-800-974-8885 or 1-858-974-8885 or www.cloud9shuttle.com. One way fare from the San Diego Airport to the Town & Country Resort & Convention is currently $11.50, although rates are subject to change without notice.

San Diego Trolley/Light Rail

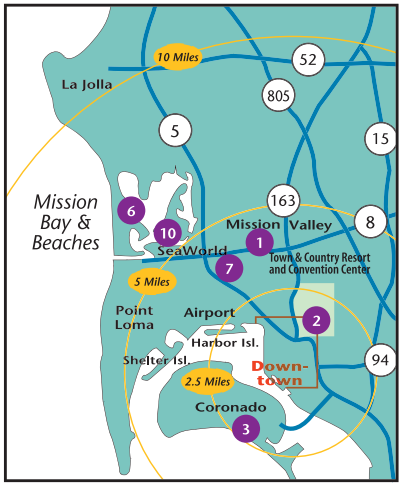
(Metropolitan Transit System)

The San Diego Trolley, i.e. the light rail, is referred to as the "moving landmark" and is a fun way to get around, serving a wide area from the International Border, to Centre City's shopping harbor, Mission Valley, Fashion Valley, Old Town, Downtown including the Gas Lamp Quarter, etc. Fares are based on the trip distance. The fare ranges from $1.25 to $3.00 depending on how many stations are traveled (fares are subject to change). Trolley cars are red, and they travel above ground on light rail lines. The closest trolley stop, the Fashion Valley Transit Center is located between the Hotel and the Fashion Valley Mall, handy to Old Town, Downtown and even Tijuana. Check the website www.sdcommute.com or call 619-233-3004 for schedule information.

Taxi Service

Taxi service from the San Diego Airport to the Town and Country Resort & Convention Center is $23 depending on traffic.

Downtown/Mission Valley Vacinity Maps



Legend:

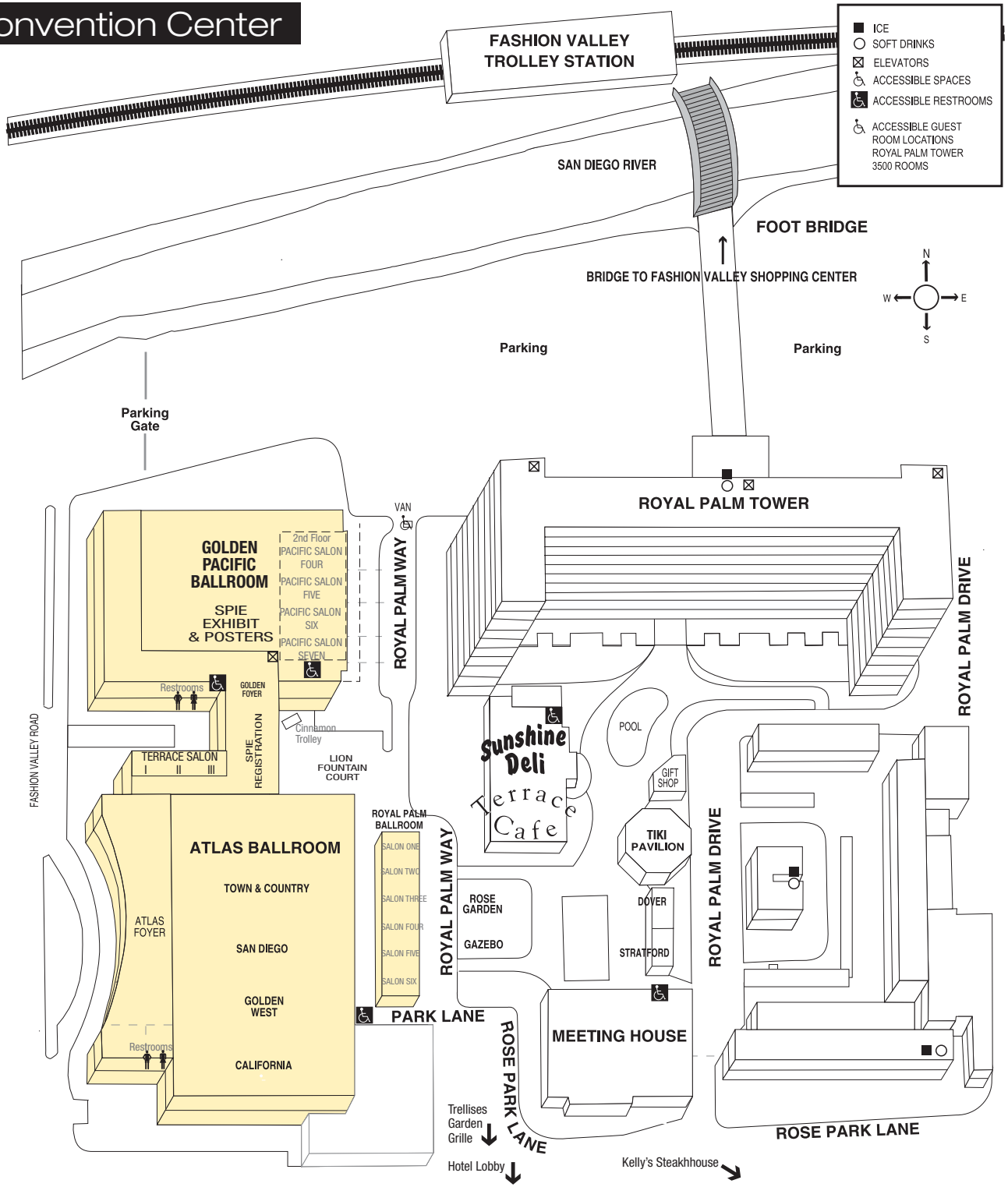
1 Town & Country Resort & Conv. Ctr.
2 Balboa Park / San Diego Zoo
3 Coronado
4 Gaslamp Quarter
5 Horton Plaza
6 Mission Bay
7 Old Town
8 Petco Park
9 Seaport Village
10 SeaWorld
11 U.S.S. Midway Museum

Town and Country Resort & Convention Center

The Town and Country Resort & Convention Center features 1,000 guest rooms spread over 40 lushly landscaped acres in San Diego's Mission Valley.

The hotel has five restaurants providing diverse dining experiences and several lounges offer a relaxing retreat from the day's activities. For casual dining, try the Terrace Café or for a quick bite visit the Sunshine Deli. You'll enjoy Charlie's for fun eats, a game of pool or the latest sports events on their big screen TV. Trellises Garden Grille features creative appetizers, healthy light entrees, a variety of pastas and pizzas, fish, vegetable entrees and lavish desserts. Kelly's Steakhouse & Irish Pub continues a tradition of serving some of the best slow-roasted prime rib you'll ever taste as well as hosting nightly sing-alongs in Kelly's famous piano bar.

Three swimming pools, full service spa and health club, barber and beauty services, in-room movies, valet and room services, and a complimentary morning newspaper are available to each guest! Located in the heart of Mission Valley, the Town and Country Resort is ideally situated for attendees and their guests to enjoy the many adjacent and nearby attractions.



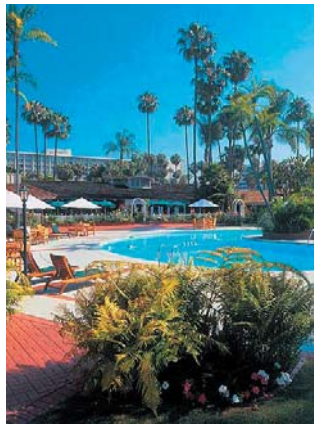
SPIE Medical Imaging

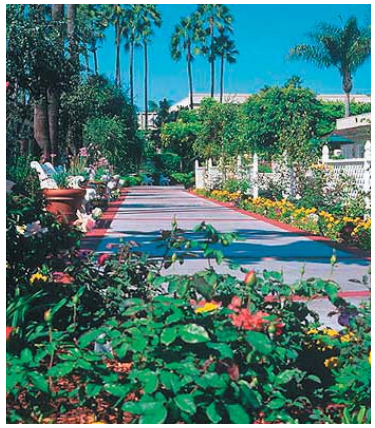
Orlando, Florida, USA

Disney's Coronado Springs Resort

7-12 February 2009 **12-17 February 2011**

San Diego, California, USA





Town and Country Resort & Convention Center

13-18 February 2010 **5-10 February 2012**

Coast to coast every other year.