

FINAL PROGRAM



CARS 2012

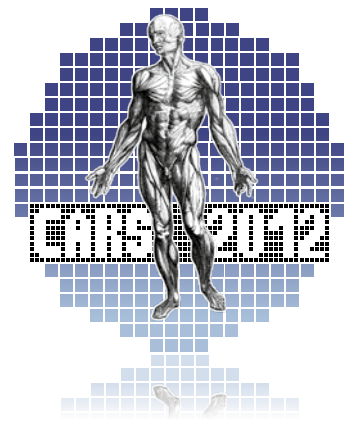
COMPUTER ASSISTED RADIOLOGY AND SURGERY

26th International Congress and Exhibition

Main Themes

- Medical Imaging
- Computed Maxillofacial Imaging
- Image Processing and Visualization
- PACS and IHE
- Telemedicine and E-Health
- Computer Aided Diagnosis
- Computer Assisted Radiation Therapy
- Image and Model Guided Therapy
- Personalized Medicine
- Surgical Navigation
- Surgical Robotics and Instrumentation
- Surgical Simulation and Education
- Computer Assisted Orthopaedic and Spinal Surgery
- Computer Assisted Head and Neck, and ENT Surgery
- Image Guided Neurosurgery
- Minimally Invasive Cardiovascular and Thoracoabdominal Surgery
- Digital Operating Room

A journal for interdisciplinary research, development
and applications of image guided
diagnosis and therapy



June 27–30, 2012
Congress Palace, Pisa, Italy

CARS 2012 President: **Davide Caramella, MD (I)**

26th International Congress and Exhibition
on Computer Assisted Radiology
Chairman: Stanley Baum, MD (USA)
Co-chair: Carlo Bartolozzi, MD (I)

16th Annual Conference of the International
Society for Computer Aided Surgery
President: Kevin Cleary, PhD (USA)

30th International EuroPACS Meeting
President: Emanuele Neri, MD (I)

14th International Workshop on
Computer-Aided Diagnosis
Chairman: Kunio Doi, PhD (USA)
Co-chair: Ulrich Bick, MD (D)

18th Computed Maxillofacial
Imaging Congress
Chairman: Allan G. Farman, PhD, DSc (USA)

13th IFCARS / SPIE / EuroPACS / ISCAS
Joint Workshop on Surgical PACS
and the Digital Operating Room
Chairmen: Osman M. Ratib, MD, PhD (CH),
Heinz U. Lemke, PhD (D)

4th EPMA / IFCARS Workshop on
Personalized Medicine and ICT
Chairs: Olga Golubnitschaja, MD (D)
Heinz U. Lemke, PhD (D)



www.cars-int.org

CARS 2012 Program Overview

Wednesday, June 27, 2012					Thursday, June 28, 2012					Friday, June 29, 2012					Saturday, June 30, 2012				
Auditorium	Pacinnotti	Fermi	Gallie		Auditorium	Pacinnotti	Fermi	Gallie		Auditorium	Pacinnotti	Fermi	Gallie		Auditorium	Pacinnotti	Fermi	Gallie	
				Poster Exhibition					Industrial / Poster Exhibition					Industrial / Poster Exhibition					Poster Exhibition
8:30	Tutorial on Medical Workstations and Model-guided Medicine	Opening Statements	CARS		8:30	Cranio-Maxillofacial Surgery	Regional PACS— Radiation Dose	CAD	CMI	8:30	4 th EuroNOTES / IFICARS / ISCAS Workshop on NOTES: An Intracapsular Challenge	Cardiovascular Imaging	CAD	CMI	8:30	Surgical Robotics and Instrumentation	CAR	CMI	CARS
8:45		Laparoscopic Surgery			8:45					8:45					8:45	Image Processing and Display			
9:00	Interventional Radiology and Personalized Medicine in Liver Tumors	Imaging and Tracking			9:00			Special Session on Breast CAD		9:00					9:00				
9:15		Poster Discussion 1 / Coffee break			9:15				Quality Control in Computed Maxillofacial Imaging	9:15					9:15				NA-MIC Hands-on Workshop
9:30	4 th EPMA / IFICARS Workshop on Personalized Medicine and ICT				9:30				Break	9:30					9:30				
9:45					9:45					9:45					9:45	Break			
10:00					10:00	Computer Assisted Neurosurgery	Break		Break	10:00	ISCAS		Break	Break	10:00	Image Processing and Display			
10:15		Cardiac Applications			10:15				Quality Control in Computed Maxillofacial Imaging	10:15	Computer Assisted Orthopaedic Surgery				10:15				
10:30		Neurosurgery, Surgical Workflow and Skill Evaluation			10:30			Special Session on Breast CAD		10:30					10:30				
10:45	Update in Interventional Oncology: Session 1 – Advances in Treatment – Liver				10:45				Round Table	10:45					10:45				
11:00		Poster Discussion 2			11:00					11:00					11:00	Break			
11:15					11:15					11:15					11:15	Intraoperative Imaging			
11:30					11:30					11:30					11:30				
11:45	Joint IFICARS/MPI Workshop on Model Guided Medicine				11:45				CARS	11:45					11:45				
12:00	Update in Interventional Oncology: Session 2 – Advances in Treatment – Liver				12:00	CARS			Autostereoscopic 3D in the Medical Arena: The Next Step in Visualization	12:00	Surgical Navigation				12:00				
12:15		Lunch			12:15			Break		12:15					12:15				
12:30		First Oral Session		Break	12:30	Takahiro-Kozuka-Lecture				12:30					12:30				
12:45					12:45	Break				12:45	CARS		Break		12:45				
13:00	Break				13:00					13:00	Luncheon Symposium on The Digital Operating Room				13:00				
13:15					13:15					13:15					13:15	Break			
						ISCAS		CAD	CMI		ISCAS		CAD	CARS/SPIE / EuroPACS/ISCAS			CARS		
13:30		IPCAI			13:30				Computed Maxillofacial Imaging in Dental Implants	13:30					13:30				
13:45					13:45					13:45					13:45				
14:00	Interventional Radiology	Special Session on Validating New Procedures			14:00	Computer Assisted ENT Surgery	Innovative Methodologies for PACS	Panel Discussion		14:00	4 th ISCAS Surgical Workshop	Ultrasound	Special Session on Brain CAD		14:00	Surgical Modeling, Simulation and Education			WG24 DICOM in Surgery Meeting
14:15		Coffee Break			14:15					14:15					14:15				
14:30		Second Oral Session			14:30				CAR	14:30					14:30				
14:45					14:45					14:45					14:45				
15:00					15:00				Computed Tomography	15:00					15:00				
15:15					15:15	Break				15:15	Break		Break		15:15				
15:30	Break				15:30	Laparoscopic Surgery				15:30	4 th ISCAS Surgical Workshop	Digital Radiography	CARS/ISCAS	CARS	15:30	Tutorial on Surgical Process Modeling and Surgical Workflow			
15:45	Computer Assisted Treatment of the Prostate				15:45		Break			15:45					15:45				
16:00					16:00		Collaborative Projects			16:00					16:00	Break			
16:15					16:15			Special Session Thoracic CAD		16:15					16:15				
16:30		Third Oral Session			16:30				Break	16:30					16:30	Computer Assisted Radiation Therapy			
16:45	Break				16:45	Break				16:45					16:45				
17:00	Minimally Invasive Spinal Surgery	Plenary Discussion Presentation of Awards			17:00	Image Guided Liver Surgery				17:00					17:00	Image Processing and Visualization			
17:15					17:15					17:15					17:15				
17:30					17:30					17:30					17:30				
17:45					17:45					17:45					17:45				
18:00					18:00					18:00					18:00				
18:15					18:15					18:15					18:15				
18:30					18:30					18:30					18:30				
CARS 2012 Opening					20:00 EuroPACS Social Event					20:00 ISCAS Social Event					This schedule is subject to alteration.				

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26th International Congress on CAR	
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13th IFCARS / SPIE / EuroPACS / ISCAS Joint Workshop on Surgical PACS and the Digital Operating Room	
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Special Session on Brain CAD – BRCAD	17
Special Session on Breast CAD – BCAD	11
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18th Computed Maxillofacial Imaging Congress	
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General Information

Venue

Palazzo dei Congressi, Pisa, Italy
Via Matteotti, 1, 56124 Pisa, Italy

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In collaboration with

Bioengineering Week (June 20–29 2012)

EPMA European Association for Predictive, Preventive and Personalised Medicine

Fondazione **ARPA**

Foundation **TicSalut**

SPIE Society of Photo Optical Engineers

Hotel Reservation

We suggest to make hotel reservations as early as possible, considering that end of June is high season in Pisa.

Conference Language

English

Conference Organization

CARS Organizer

Prof. Heinz U. Lemke, PhD
Technical University of Berlin (D)
Research Professor of Radiology
University of Southern California, Los Angeles (USA)
International Foundation for CARS
Email: hulemke@cars-int.org

CARS Conference Office

Mrs. Franziska Schweikert
Im Gut 15
79790 Kuessaberg, Germany
Tel.: +49 (0) 7742 922 434
Fax: +49 (0) 7742 922 438
Email: office@cars-int.org
www.cars-int.org

Registration Desk

Opening Hours:
Wednesday – Thursday, 7:30 – 19:00
Friday – Saturday, 8:00 – 19:00

Poster Session Hours

Wednesday, June 27 – Friday, June 29, 8:30 – 18:30
Saturday, June 30, 2012, 8:30 – 17:00

Poster Presentation Times

No.	Presentation Times
CAR	
1 – 15	Wednesday, June 27 13:30 – 15:00
16 – 32	Thursday, June 28 14:00 – 15:30
33 – 47	Thursday, June 28 9:00 – 10:30
48 – 62	Thursday, June 28 10:30 – 12:00
ISCAS	
63 – 77	Wednesday, June 27 12:00 – 13:30
78 – 91	Thursday, June 28 9:30 – 11:00
92 – 101	Friday, June 29 9:00 – 10:30
102 – 115	Friday, June 29 16:00 – 17:00
116 – 131	Friday, June 29 14:00 – 15:30
132 – 142	Saturday, June 30 10:30 – 11:30
143 – 152	Thursday, June 28 9:00 – 10:30
EuroPACS	
153 – 165	Friday, June 29 9:00 – 10:30
CAD	
166 – 176	Friday, June 29 16:00 – 17:30
CMI	
177 – 183	Thursday, June 28 15:30 – 17:00
CARS	
184 – 198	Saturday, June 30 9:00 – 10:30

Poster Awards

Thursday, June 28, 2012, 18:30

Presentation of Best Student Award

Sponsored by NDI Europe
Friday, June 29, 2012, 18:30

We acknowledge the support of the following CARS 2012 Exhibitors and Sponsors

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FUJIFILM

CARS 2012 Silver Sponsor:

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Industrial Exhibition

June 28–29, 2012

Exhibition Hours

Thursday, June 28 8:30–18:30
Friday, June 29 8:30–18:30

No liability can be accepted for any errors. The program is subject to alteration.

CPD Credits

CARS 2012 has been approved by The Royal College of Radiologists for 30 Category I CPD Credits for full attendance. Please request a Certificate of Attendance at the CARS 2012 Registration Desk in Pisa.

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 Shinichi Wada, PhD (J)
 Andreas Wahle, PhD (USA)
 Stefan Weber, PhD (CH)
 Berthold B. Wein, MD (D)
 Thomas Wendler, PhD (D)
 Michael Wich, MD (D)
 Simon Wildermuth, MD (CH)
 Richard Wootton, PhD, DSc (AUS)
 Heinz Wörn, PhD (D)
 Guang-Zhong Yang, PhD (UK)
 Hiro Yoshida, PhD (USA)

Wednesday, June 27, 2012 8:30–18:00

**CARS Clinical Day**

Chairmen: Leonard Berliner, MD (USA)
Eric vanSonnenberg, MD (USA)

Auditorium**9:00 Interventional Radiology and Personalized Medicine in Liver Tumors – IR/PM**

Session Chairs: Leonard Berliner, MD (USA), Eric vanSonnenberg, MD (USA)

9:00 Personalized medicine for liver cancer – update

Invited Speaker: L. Berliner, New York Methodist Hosp., Brooklyn, NY (USA)

9:15 Technology and clinical impact of PET-CT in cancer therapy

Invited Speaker: G. Esposito, Georgetown Univ. Medical Center, Washington, DC (USA)

9:30 Technological Developments in Abdominal Imaging and Interventions – AI

Session Chairs: Eric vanSonnenberg, MD (USA), Leonard Berliner, MD (USA)

9:30 Role of PET-CT for guiding ablation therapies

Invited Speaker: G. Esposito, Georgetown Univ. Medical Center, Washington, DC (USA)

9:45 3T MR: what's new in abdominal applications?

Invited Speaker: C. Bartolozzi, Univ. of Pisa (I)

10:00 C-arm CT: impact on interventional oncology

Invited Speaker: I. Bargellini, Univ. of Pisa (I)

10:15 Break**10:45 Update in Interventional Oncology: Session 1 Advances in Treatment – Liver – I01**

Session Chair: Giuseppe Esposito, MD (USA)

10:45 Technology of radio-frequency ablation

Invited Speakers: P. Morrison, Brigham and Women's Hosp., Boston, MA, E. vanSonnenberg, Cave Creek, AZ (USA)

11:00 Technology of microwave ablation

Invited Speakers: P. Morrison, Brigham and Women's Hosp., Boston, MA, L. Berliner, New York Methodist Hospital, Brooklyn, NY (USA)

11:15 Microwave and image fusion: technological advances: Part 1

Invited Speaker: L. Solbiati, General Hosp. of Busto Arsizio, Varese (I)

11:30 Microwave and image fusion: technological advances: Part 2

Invited Speaker: L. Solbiati, General Hosp. of Busto Arsizio, Varese (I)

11:45 Update in Interventional Oncology: Session 2 Advances in Treatment – Liver – I02

Session Chair: Leonard Berliner, MD (USA)

11:45 Liver cancer: role of tumor ablation – Part 1

Invited Speaker: E. vanSonnenberg, Kern/UCLA Medical Center, Bakersfield, CA (USA)

12:00 Liver cancer: role of tumor ablation – Part 2

Invited Speaker: E. vanSonnenberg, Kern/UCLA Medical Center, Bakersfield, CA (USA)

12:15 Liver cancer: role of chemoembolization

Invited Speaker: L. Berliner, New York Methodist Hosp., Brooklyn, NY (USA)

12:30 Combined therapies for hepatocellular carcinoma

Invited Speaker: R. Lencioni, Univ. of Pisa (I)

12:45 Break**Auditorium****14:00 Interventional Radiology – IR**

Session Chair: Davide Caramella, MD (I)

14:00 Advances in pediatric IR and laparoscopic surgery

Invited Speaker: K.P. Davenport, Children's National Medical Center, Washington, DC, L. Berliner, New York Methodist Hosp. Brooklyn, NY (USA)

14:15 Robustness enhancement of motion compensation for a non-invasive ultrasound thernagnostic system

N. Koizumi, T. Funamoto, J. Seo, N. Sugita, A. Nomiya, A. Ishikawa, Y. Homma, Y. Matsumoto, M. Mitsuishi, The Univ. of Tokyo, K. Yoshinaka, AIST, Tsukuba (J)

14:30 Simulation-based patient-specific prediction of good guidewire shape in catheterization

S. Hirayama, T. Okada, K. Osuga, M. Hori, N. Tomiyama, Y. Sato, Osaka Univ., Y.-W. Chen, Ritsumeikan Univ., Shiga (J)

14:45 Computer assisted stereotactic targeting of small benign bone lesions

G. Widmann, P. Schullian, M. Fasser, R. Bale, Innsbruck Medical Univ. (A)

15:00 Computer assisted multi-modality approach using 99mtc-MAA SPECT/CT and 90Y microsphere distribution to predict response assessment with liver radioembolization

N.C. Hall, M. Robertson, F. Siddiqui, J. Zhang, J. Campbell, R. Layman, M. Knopp, The Ohio State Univ., Columbus, OH (USA)

15:15 Registering contrast enhanced MRI with intra-procedural images in CT-guided ablation therapy of lung cancer

N. Hata, A. Yamada, S. Tatli, P. Morrison, S. Silverman, Brigham and Women's Hosp. and Harvard Medical School, Boston, MA (USA)

15:30 Break**15:45 Computer Assisted Treatment of the Prostate**

Session Chair: Dirk Beyersdorff, MD (D)

15:45 Unsupervised evidential classification/clustering for computer aided detection of prostate cancer

N. Betrouni, N. Makni, A. Iancu, P. Puech, S. Mordon, INSERM, Lille (F)

16:00 Novel real-time prostate ultrasound elastography technique: phantom study

A. Samani, S.R. Mousavi, Univ. of Western Ontario, London, Ontario (CDN)

16:15 Preclinical evaluation of MRI-compatible pneumatic robot for angulated needle placement in prostate interventions

J. Tokuda, S.-E. Song K. Tuncali, C.M. Tempny, N. Hata, Brigham and Women's Hosp., Boston, MA, G.S. Fischer, Worcester Polytechnic Inst., Worcester, MA, I. Iordachita, B.J. Cho, The Johns Hopkins Univ., Baltimore, MD (USA), R. Seifabadi, G. Fichtinger, Queen's Univ., Kingston, Ontario (CDN)

16:30 Photodynamic therapy for prostate cancer: a computer aided procedure

N. Betrouni, P. Colin, P. Puech, M. Vermandel, S. Mordon, INSERM, Lille (F)

16:45 Break**17:00 Minimally Invasive Spinal Surgery – MISS**

Session Chair: John Chiu, DSc, MD (USA)

17:00 Evolving minimally invasive endoscopic spine surgery: a surgeon's perspective on technological convergence and digital OR control system

Invited Speaker: J. Chiu, California Center for Minimally Invasive Spine Surgery, Newbury Park, CA (USA)

17:15 Evaluation of new approaches for lumbar intraforaminal disc prolapse removal using 3D surgical planning

D. Foti, R. Vannozzi, Univ. Hosp. Pisa, V. Ferrari, M. Ferrari, F. Mosca, EndoCAS, Pisa (I)

17:30 Intraoperative navigation system for spine surgery

A. De Mauro, Vicomtech-IK4, San Sebastian (E)

17:45 The use of a combined navigation and CT-scanner for posterior thoracolumbar instrumentation – implications on the intraoperative rate of positioning corrections for screws

T.R. Blatter, R.L. Jilavu, W. Leinich, V.A. Rusu, H. Balling, Orthopädische Fachklinik Schwarzach (D)

18:00 End of Session

Wednesday, June 27, 2012 8:30–17:30

Co-located Conference in cooperation with CARS:
IPCAI 2012 – 3rd International Conference on Information Processing in Computer-Assisted Interventions
 General Chairs: Nassir Navab, PhD (D), Pierre Jannin, PhD (F)



Fermi

Program Chairs:

Purang Abolmaesumi, PhD (CDN); Leo Joskowicz, PhD (IL)

Executive Committee:

Paolo Dario, CRIM (I); Stefanie Demirci, CAMP/TUM (D)

Area Chairs:

Hervé Delingette, INRIA (F); Gabor Fichtinger, Queen's Univ. (CDN); Makoto Hashizume, Fukuoka (J); Thomas Lango, SINTEF (N); Ken Masamune, Tokyo (J); Lena Meier Hein, DKFZ (D); Parvin Mousavi, Queen's Univ. (CDN); Sebastien Ourselin, UCL (UK); Graeme Penney, King's College (UK); Ziv Yaniv, Georgetown Univ. (USA); Guoyan Zheng, Univ. of Bern (CH)

Program Board:

David Hawkes, UCL (UK); Kensaku Mori, Nagoya (J); Tim Salcudean, UBC (CDN); Gabor Szekely, ETH (CH); Russell Taylor, JHU (USA); Guang Zhong Yang, ICL (UK)

Industrial Liaisons

Wolfgang Wein, White Lion Tech. GmbH (D); Ameet Jain, Philips (USA); Tom Vercauteren, Mauna Kea (F); Simon DiMaio, Intuitive Surgical (USA); Joerg Traub, SurgicEye (D); Leslie Holton, Medtronic (USA); Frank Sauer, Siemens (USA)

8:30 Opening Statements

8:40 Laparoscopic Surgery

Chair: Russel H. Taylor, PhD (USA)

Template-based conformal shape-from-motion-and-shading for laparoscopy

A. Malti A. Bartoli, ALCoV-ISIT, Clermont-Ferrand (F)

Towards live monocular 3d laparoscopy using shading and specular information

T. Collins A. Bartoli, ISIT – Image Science for Interventional Techniques, Clermont-Ferrand (F)

Automatic detection and localization of Da Vinci tool tips in 3D ultrasound

O. Mohareri, M. Ramezani, P. Abolmaesumi, S.E. Salcudean, Univ. of British Columbia, Vancouver, British Columbia (CDN)

Real-time methods for long-term tissue feature tracking in endoscopic scenes

M.C. Yip, D.G. Lowe, S.E. Salcudean, R.N. Rohling, The Univ. of British Columbia, Vancouver, British Columbia, C.Y. Nguan, Vancouver General Hospital (CDN)

9:00 Imaging and Tracking

Chair: Tim Salcudean (CDN)

A closed-form differential formulation for ultrasound spatial calibration

M. Najafi N. Afsham, P. Abolmaesumi, R.N. Rohling, The Univ. of British Columbia, Vancouver, British Columbia (CDN)

Model-based respiratory motion compensation in MRgHIFU

P. Arnold, F. Preiswerk, B. Fasel, P. Cattin, Univ. of Basel, R. Salomir, Univ. of Geneva (CH), K. Scheffler, Max Planck Inst. for Biological Cybernetics, Tübingen (D)

Non-iterative multi-modal partial view to full view image registration using local phase-based image projections

I. Hacıhaliloglu, D. Wilson, M. Gilbert, M. Hunt, P. Abolmaesumi, The Univ. of British Columbia, Vancouver, British Columbia (CDN)

A hierarchical strategy for reconstruction of 3D acetabular surface models from 2d calibrated X-ray images

S. Schumann, M. Bergmann, M. Thali, L.-P. Nolte, G. Zheng, Univ. of Bern, M. Tannast, Inselspital, Bern (CH)

9:20 Poster Discussion 1 and Coffee Break

10:15 Cardiac Applications

Chair: David J. Hawkes, PhD (UK)

A navigation platform for guidance of beating heart transapical mitral valve repair
 J. Moore, C. Wedlake, P. Lang, M. Rajchl, T.M. Peters, Univ. of Western Ontario, London, Ontario, D. Bainbridge, G. Guiraudon, M. Chu, M. Chu, B. Kiaii, London Health Sciences Center (CDN)

Motion estimation model for cardiac and respiratory motion compensation

S. Kaeppler, A. Brost, M. Koch, J. Hornegger, Technical Univ. Erlangen-Nürnberg, Erlangen, N. Strobel, Siemens Healthcare, Forchheim, F. Bourier, K. Kurzidim, Krankenhaus Barmherzige Brüder, Regensburg (D), W. Wu, T. Chen, Siemens Corporation, NJ (USA)

Cardiac unfold: a novel technique for image-guided cardiac catheterization procedures

Y.L. Ma, R. Karim, J. Housden, R. Razavi, T. Schaeffter, K.S. Kawal, King's College London, C.A. Rinaldi, Guy's & St. Thomas' Hospitals, London (UK), G. Gijsbers, R. Bullens, Philips Healthcare, Best (NL)

Enabling 3D ultrasound procedure guidance through enhanced visualization

L. Brattain, N. Vasilyev, R. Howe, Harvard Univ., Cambridge, MA (USA)

10:35 Neurosurgery, Surgical Workflow and Skill Evaluation

Chair: Pierre Jannin, PhD (F)

Fast and robust registration based on gradient orientations: case study matching intra-operative ultrasound to pre-operative MRI in neurosurgery

D. De Nigris, L. Collins, T. Arbe, McGill Univ., Montreal, Quebec (CDN)

Atlas-based segmentation of the subthalamic nucleus, red nucleus, and substantia nigra for deep brain stimulation by incorporating multiple MRI contrasts

Y. Xiao, L. Bailey, M.M. Chakravarty, S. Beriault, A.F. Sadikot, G.B. Pike, McGill Univ., Montreal, Quebec (CDN)

Towards systematic usability evaluations for the OR: an introduction to OR-Use framework

A. Bigdelou, A. Okur, M.-E. Hoffmann, B. Azizi, N. Navab, Technical Univ. Munich (D)

Improving the development of surgical skills with virtual fixtures in simulation

A. Hernansanz, A. Casals, Technical Univ. of Catalonia, Barcelona (E), D. Zerbato, L. Gasperotti, M. Scandola, P. Fiorini, Univ. of Verona (I)

Sparse hidden Markov models for surgical gesture classification and skill evaluation

L. Tao, R. Vidal, E. Elhamifar, S. Khundapur, G. Hager, The Johns Hopkins Univ., Baltimore, MD (USA)

11:00 Poster Discussion 2

12:00 Lunch

12:30 First Oral Session

Chair: Terry Peters, PhD (CDN)

14:15 Coffee Break

14:30 Second Oral Session

Chairs: Kensaku Mori, PhD (J); Robert D. Howe, PhD (USA)

16:15 Coffee Break

16:30 Third Oral Session

Chairs: Nassir Navab, PhD (D); Purang Abolmaesumi, PhD (CDN)

17:05 Plenary Discussion

Presentation of Awards

17:30 End of Session

Wednesday, June 27, 2012 8:30–17:30



CARS
Computer Assisted Radiology and Surgery

Pacinotti

8:30 Tutorial on Medical Workstations and Model-guided Medicine

Michael W. Vannier, Univ. of Chicago Medical Center (USA)
Heinz U. Lemke, Technical Univ. of Berlin (D)



4th EPMA / IFCARS Workshop on Personalized Medicine and ICT

Chairs: Olga Golubnitschaja, MD (D)
Heinz U. Lemke, PhD (D)

Pacinotti

9:30 Personalized Medicine and Patient Modelling in Oncology – PMO

Session Chairs: Olga Golubnitschaja, MD (D), Heinz U. Lemke, PhD (D)

9:30 Breast cancer risk assessment by patient modelling based on non-invasive sub-cellular imaging and construction of diagnostic windows
O. Golubnitschaja, Univ. Hosp. Bonn (D)

9:45 Personalized medicine in DCE MRI imaging for the evaluation of neoadjuvant treatment for locally advanced breast cancer: the effect of parity status
S. Drisis, M. Lemort, Inst. Bordet, Brussels (B)

10:00 Combined analysis of DCE, DWI and biological parameters for early prediction of breast tumour response to neo-adjuvant chemotherapy
M. Bruynooghe, SenoCAD Research, Karlsruhe (D), C. De Bazelaire, A. Pluvinage, Hosp. Saint-Louis, Paris (F)

10:15 A great saving of imaging during intensive post-operative monitoring of breast cancer patients with serum CEA-TPA-CA15.3 Tumor Marker (TM) panel and an Individual Reference Limit (IRL)
A. Nicolini, S. Fancelli, P. Ferrari, L. Anselmi, Univ. of Pisa (I)

10:30 Independent prognostic value of whole-body metabolic tumor burden from FDG-PET in non-small cell lung cancer
Y. Pu, D. Appelbaum, The Univ. of Chicago Hosp., K. Wroblewski, The Univ. of Chicago (USA), H. Zhang, First Hosp. of Lanzhou Univ., S. Liao, Peking Univ. (CHN)

10:45 Modelling of a paediatric cancer (neuroblastoma) through Next Generation Sequencing (NGS) studies
U. Rovigatti, D. Caramella, L. Carotenuto, V. Barbarito, I. Larrabide, M.C. Villa-Urriol, A. Frangi, Univ. of Pisa, C. Favre, Univ. Hosp. Pisa (I), M. Schweiger, H. Lehrach, Max Plank Inst., Berlin (D)

11:00 Information integration for patient-specific modelling using MEBNs: example of laryngeal carcinoma
H.U. Lemke, Univ. of Southern California, Los Angeles, M. Cypko, Free Univ. Berlin (D), L. Berliner, New York Methodist Hosp. Brooklyn, NY (USA)

11:15 End of Workshop



CARS
Computer Assisted Radiology and Surgery

Pacinotti

11:30 Joint IFCARS/MPI Workshop on Model Guided Medicine

Session Chairs: Hans Lehrach, PhD (D), Anthony J. Brookes, PhD (UK)

11:30 ITFoM – new concepts of information technology for the future of medicine
H. Lehrach, Max-Planck-Institute for Molecular Genetics, Berlin (D)

11:45 Knowledge engineering for health: a new discipline required to bridge the 'ICT Gap' between research and healthcare
A.J. Brookes, Univ. of Leicester (UK)

12:00 Integrating patient data for decision making in tumor boards
A. Dietz, Univ. Hosp. Leipzig (D)

12:15 Panel Discussion
Panelists: A.J. Brookes, Univ. of Leicester (UK), S. Drisis, Inst. Bordet, Brussels (B), A. Dietz, Univ. Hosp. Leipzig, O. Golubnitschaja, Univ. Hosp. Bonn, H. Lehrach, Max-Planck-Inst. for Molecular Genetics, Berlin, H.U. Lemke, Technical Univ. of Berlin (D), U. Rovigatti, Univ. of Pisa Medical School (I)

14:00 Special Session on Validating New Procedures

Session Chairs: Kirby G. Vosburgh, PhD (USA); Pierre Jannin, PhD (F)

14:00 Measures and metrics for new procedures
Invited Speaker: K.G. Vosburgh, Brigham and Women's Hosp., Boston, MA (USA)

14:15 Model for analysis of man-computer-interaction evaluation in surgery
A. Machno, J. Meixensberger, Innovation Center Computer Assisted Surgery (ICCAS), Leipzig, W. Korb, G. Scheuermann, Univ. of Leipzig, G. Strauss, Univ. Hosp. Leipzig (D), P. Jannin, O. Dameron, Univ. of Rennes (F)

14:30 Development of microsurgical skill assessment system
K. Harada, Y. Minakawa, Y.M. Baek, N. Sugita, M. Mitsuishi, The Univ. of Tokyo, S. Sora, Tokyo Metropolitan Police Hosp., A. Morita, NTT Medical Center Tokyo (J)

14:45 Accuracy assessment of a prototype surgical interactive robot developed for the MRI environment
T. Koivukangas, T. Makkonen, Y. Louhisalmi, K. Nevala, Univ. of Oulu (FIN)

15:00 Problems, obstacles and complications in a consecutive series of more than 1000 computer assisted knee replacements
N. Confalonieri, A. Manzotti, Istituti Clinici di Perfezionamento Milano (I)

15:15 Break

15:45 Nanotechnology – NANO

Session Chair: Russell J. Andrews, MD (USA)

15:45 MSCs transplantation and imaging by using magnetic multiwall carbon nanotubes
O. Vittorio M. Cecchini, Scuola Normale Superiore, A. Cuschieri, School of Advanced Studies, Pontedera, P. Parchi, N. Funel, M. Masini, M. Lisanti, Univ. of Pisa (I)

16:00 A comparative study of ferumoxide and multiwall carbon nanotubes for the labeling and tracking of human pancreatic islets
F. Syed, M. Bugliani, M. Masini, F. Filippini, U. Boggi, P. De Simone, L. Marselli, V. Battaglia, P. Marchetti, Univ. of Pisa, C. Riggio, V. Raffa, Sant'Anna School of Advanced Studies, Pontedera, O. Vittorio, Scuola Normale Superiore, Pisa (I)

16:15 Wireless remote real-time monitoring of multiple neurotransmitters using nanoarrays
R.J. Andrews, J. Koehne, M. Meyyappan, NASA Ames Research Center, Los Gatos, CA, K. Bennet, S. Chang, I. Kim, C. Kimble, K. Lee, M. Marsh, P. Min, Mayo Clinic, Rochester, MN (USA)

16:30 Stimulation Methods – SM

Session Chair: Russell J. Andrews, MD (USA)

16:30 Improving the brain-machine interface for deep brain stimulation
Invited Speaker: R.J. Andrews, NASA Ames Research Center, Los Gatos, CA (USA)

16:45 Intraoperative laser Doppler measurements for navigation during deep brain stimulation implantation
K. Wardell, J. Richter, P. Zsigmond, Linköping Univ. (S), S. Hemm-Ode, Univ. of Applied Sciences Muttentz (CH)

17:00 YeB atlas at OR: a 3D histological atlas of the basal ganglia in the operating room for deep brain stimulation surgery under stereotactic conditions
S. Fernandez Vidal, C. Karachi, M.-L. Welter, E. Bardinet, J. Yelnik, CRICM, Paris (F), A. Barborica, FHC Inc., Bowdoin, ME (USA)

17:15 Evaluation of surgical process analysis for deep brain stimulation: preliminary report
H.W. Kim, J. Jang, Y.S. Kim, Hanyang Univ., Seoul (ROK)

17:30 End of Session

Wednesday, June 27, 2012 08:30–19:00



CARS – Workshops and Special Events

Galilei

08:30 – 11:30 Tutorial on Open Source Software: Should I Join the Open Source Movement?

Kevin Cleary, PhD, Children's National Medical Center, Washington, DC (USA)

Open source software development is an increasingly popular software development model, particularly in the research community. The availability and use of open source software is rapidly increasing everywhere, including within the computer assisted radiology and surgery community. However, as with most technologies, open source software is not a "cure-all", but rather one option for software development in medical devices. In this tutorial, we will start with an introduction and overview of the open source software field, including a discussion of what the term open source means, the licensing issues, and the business models. We will then survey the landscape of existing open source tools, with a particular emphasis on tools for the computer assisted radiology and surgery domain. We will next present an example open source implementation, the Image-Guided Surgery Toolkit (IGSTK). We will conclude with a demonstration of IGSTK and discuss the issues involved in using open source software in the clinical domain.

Special registration required.



Auditorium

CARS 2012 Opening



18:30 Welcome

Davide Caramella, MD
President CARS 2012

Stanley Baum, MD, Chairman
Computer Assisted Radiology, 26th International Congress and Exhibition (CAR)

Kevin Cleary, President
16th Annual Conference of the International Society for Computer Aided Surgery (ISCAS)

Emanuele Neri, MD, President
30th International EuroPACS Meeting (EuroPACS)

Kunio Doi, PhD, Chairman,
14th International Workshop on Computer-Aided Diagnosis (CAD)

Allan G. Farman, PhD, DSc, Chairman,
18th Computed Maxillofacial Imaging Congress (CMI)

Keynote Lecture:

Quest for patient-friendly surgical interventions Professor Sir Alfred Cuschieri, MD

Scuola Superiore Sant'Anna, Pisa (I), Institute of Medical Science and Technology (IMSaT), Dundee (UK)



JICARS – Japanese Institutes of CARS

Chairmen: Takeyoshi Dohi, PhD (J)
Kunio Doi, PhD (USA)
Kiyonari Inamura, PhD (J)

Galilei

14:00 Computer Aided Surgery in Asia – Oceania

Session Chairs: Masakatsu G. Fujie, PhD (J)

14:00 On concern and interests in basic safety and essential performance of medical robots
K. Chinzei, National Inst. of Advanced Industrial Science and Technology (AIST), Tsukuba (J)

14:15 Collaborative work of Waseda University with Prof. Paolo Dario's group in Italy
H. Ishii, Waseda Univ. (J), A. Menciassi, Scuola Superiore Sant'Anna, Pontedera (I)

14:30 Present status of regulatory science and education/training of computer aided low-invasive microsurgery in Japan
H. Iseki, Tokyo Women's Medical Univ. (J)

14:45 Collaboration of Korea and Japan: a robotic approach for ear surgery
B.-J. Yi Hanyang Univ., Seoul (ROK)

15:00 How can we improve the registration accuracy of surgical navigation?
J. Hong, Daegu Gyeongbuk Inst. of Science and Technology (DGIST) (ROK)

15:15 New Frontier in Radiology and Radiation Oncology in Japan

Session Chairs: Noriyuki Tomiyama MD (J)

15:15 CT and MR imaging of HCC
T. Kim, Osaka Univ. (J)

15:30 Our experience of C-arm CT as a novel tool for visceral interventional radiological treatment
H. Higashihara, Osaka Univ. (J)

15:45 Diagnoses in cardio-vascular and pulmonary diseases
M. Higahi, National Cerebral and Cardiovascular Center, Osaka (J)

16:00 Brachytherapy for prostate cancer
Y. Yoshioka, Osaka Univ. (J)

16:15 Computer assisted Image-Guided Radiotherapy (IGRT)
M. Koizumi, Osaka Univ. (J)

16:30 CAD and Health Care

Session Chairs: Kensaku Mori PhD (J)

16:30 A new role of preventive care in dentistry by use of Computer-Aided Detection (CAD) system for screening the systemic diseases found in panoramic radiography
H. Fujita, T. Hayashi, T. Hara, T. Sawagashira, M. Tagami, Gifu Univ., A. Katsumata, Y. Iida, K. Katagi, Asahi Univ., Gifu (J)

16:45 CIRCUS+: an integrated platform for diagnostic support and CAD development dedicated to teleradiologic environment
Y. Masutani, Y. Nomura, S. Miki, T. Yoshikawa, N. Hayashi, K. Ohtomo, The Univ. of Tokyo Hosp. (J)

17:00 On integrated platform for health care data bank to visualize and increase efficiency of the clinical services
Y. Kinoshita, Gifu Univ., M. Aihara, M. Okayama, E. Kajii, Jichi Medical Univ., Tochigi, M. Ishii, H. Shimamoto, GNSS Technologies Inc., Tokyo (J)

17:15 End of Session



MICARS – Mediterranean Institute of CARS

Chairmen: Javier Herrero Jover, MD, PhD (E)
Davide Caramella, MD (I)

17:15 Special Session on State of the Art and Future Projects of Computer Assisted Radiology and Surgery in Turkey

Session Chair: Javier Herrero Jover, MD, PhD (E)

17:15 State of the art on computer assisted radiology and surgery in Turkey
Invited Speaker: M. Ozmen, Hacettepe Univ. Hosp. Ankara (TR)

17:30 Future projects of computer assisted radiology and surgery in Turkey
Invited Speaker: U. Senol, Akdeniz Univ. Hosp., Antalya (TR)

17:45 The role of radiological images in the Digital Operating Room (DOR) and concepts of surgical PACS
J. Herrero Jover, Alma IT Systems, Barcelona (E)

18:00 Round Table Discussion

18:15 End of Session

Thursday, June 28, 2012 8:30–14:00



16th Annual Conference of the International Society for Computer Aided Surgery

President: Kevin Cleary, PhD (USA)



30th International EuroPACS Meeting

President: Emanuele Neri, MD (I)

Auditorium

8:30 Cranio-Maxillofacial Surgery – CMF

Session Chair: Uldis Bite, MD (USA)

8:30 Introduction

Kevin Cleary, PhD (USA), ISCAS President

8:40 The impact of cross-sectional imaging on surgery of the face: a forty-year story
Keynote Speakers: Stephen Golding, FRCS, MD, Univ. of Oxford, Headington, Elizabeth Beckmann, BSc, Lanmark, Petts Wood (UK)

9:00 Computation of an average cranial shape of three to twelve months old infants using 3D stereophotogrammetry

T. Maal, L. Verhamme, E. van Lindert, W. Borstlap, S. Bergé, St. Radboud Univ. Medical Center, Nijmegen (NL)

9:15 A new method for vector planning in simulation-guided navigation for mandibular distraction osteogenesis

G. Badiali, A. Bianchi, C. Marchetti, Univ. of Bologna, E. Schileo, A. Roncari, S. Orsola-Malpighi Univ. Hosp., Bologna (I)

9:30 Use of navigation for reconstruction of the fractured orbit

A. Baumann, K. Schicho, G. Dorner, Medical Univ. of Vienna (A)

9:45 The changing face of craniofacial imaging: cranial sutures and “Black Bone” MRI

K.A. Eley, S.J. Golding, Univ. of Oxford, Headington, F. Sheerin, S.R. Watt-Smith, Oxford Univ. Hosp. (UK)

10:00 Computer Assisted Neurosurgery – CANS

Session Chairs: Richard D. Bucholz, MD, FACS (USA); Ichiro Sakuma, PhD (J)

10:00 Hand-assisted positioning and contact pressure control for motion compensated robotized transcranial magnetic stimulation

L. Richter, R. Bruder, A. Schweikard, Univ. of Lübeck (D)

10:15 Five hundred StereoElectroEncephalography (SEEG) procedures for epilepsy surgery: a retrospective analysis of clinical safety and in vivo application accuracy

F. Cardinale, M. Cossu, L. Castana, M.P. Schiariti, A. Misericocchi, G. Casaceli, C. Caborni, A. Moscato, G. Lo Russo, Niguarda Hosp., Milano (I)

10:30 Automatic laser ablation system for high-precision treatment of brain tumors

H. Liao, K. Fujiwara, T. Ando, E. Kobayashi, I. Sakuma, The Univ. of Tokyo, T. Maruyama, Y. Muragaki, H. Iseki, Tokyo Women's Medical Univ. (J)

10:45 Automatic trajectory planning in Stereo-electroencephalography image guided neurosurgery

C. Caborni, E. De Momi, L. Antiga, G. Ferrigno, Technical Univ. of Milan, F. Cardinale, Hosp. Niguarda Cà Granda, Milan (I), A. Hammoud, Renishaw Mayfield SA, Nyon (CH)

11:00 Leksell Gamma Knife radiosurgery (LKG) for Arterio-Venous Malformations (AVM): time resolved contrast enhanced MR angiography assisted dosimetric planning. A preliminary study

M. Vermandel, N. Betrouni, N. Reyns, INSERM, V. Le Thuc, Univ. Hosp., Lille, X. Leclerc, Univ. Lille Nord (F)

11:15 Efficient neurosurgical monitoring method for operative safety on image-guided brain tumor resection

J. Jang, Y.S. Kim, Hanyang Univ., Seoul (ROK)

11:30 Angiolab: a software tool for endovascular treatment planning of cerebral aneurysms

L. Carotenuto, Univ. Pompeu Fabra, Barcelona (E)

11:45 Force detecting gripper and force feedback system for neurosurgery

T. Yoneyama, T. Watanabe, H. Kagawa, J. Hamada, Y. Hayashi, M. Nakada, Kanazawa Univ. (J)

12:00 Break



CARS Computer Assisted Radiology and Surgery

Auditorium

12:15–12:45 Takahiro-Kozuka-Lecture

Biomedical imaging research, today and tomorrow

Keynote Speaker: Hans Ringertz, MD, PhD, Karolinska Hosp., Stockholm (S)

Pacinotti

8:30 Regional PACS – Radiation Dose – RP-RD

Session Chairs: Josep Fernández-Bayó, PhD (E); Peter Pokieser, MD (A)

8:30 Reasons to monitor patient dose

Invited Speaker: E. Picano, National Research Council, Pisa (I)

8:45 Consolidating and migrating the PACS of different hospitals to a central system

E. Bellon, T. Deprez, M. Feron, W. Van Damme, J. Demey, B. Van den Bosch, Univ. Hosp. Leuven, M. De Galan, S. Standaert, Onze Lieve Vrouw Hosp., Aalst (B)

9:00 Development of the regional EPR and PACS sharing system on the infrastructure of cloud computing technology, server based computing

H. Kondoh, K. Teramoto, Tottori Univ. Hosp., Yonago, T. Kawai, M. Mochida, M. Nishimura, SECOM sanin Co. Ltd., Matue (J)

9:15 Implementation of a pilot Cross-Enterprise Document Sharing (XDS) environment in a regional hospital network

D. Caramella, Univ. of Pisa (I)

9:30 Proposal for an area-wide IHE XDS-I based PACS imaging information system

~~B.L. Crowe, Bernhard Crowe & Associates, Chifley ACT, NSW (AUS)~~

9:45 Monitoring patient dose through PACS tracking system in Lucca Health unit

V. Ravaglia, R. Orsini, M. Quattrocchi, A. Marrone, M. Fruzzetti, Azienda USL2 Lucca (I)

10:00 Break

10:30 Teleradiology – eLearning – TR-EL

Session Chairs: Frits H. Barneveld Binkhuysen, MD, PhD (NL); Javier Herrero Jover, MD, PhD (E)

10:30 Teleradiology: how and when

Invited Speaker: J. Reponen, Raahe Hosp., Oulu (FIN)

10:45 European teleradiology now and in the future: results of a survey

F.H. Barneveld Binkhuysen, Hosp. Eemland, Amersfoort, E. Ranschaert, Jeroen Bosch Hosp., Den Bosch (NL)

11:00 Using control messages for administrative tasks and constancy testing of DICOM e-mail based teleradiology networks

F. Schwind, H. Münch, A. Schröter, H.-P. Meinzer, U. Engelmann, CHILI GmbH, Dossenheim, G. Weisser, Univ. Hosp. Mannheim (D)

11:15 Telemedicine applied to the management of ischemic stroke patients

E. Vio, C. Saccavini, C. Dario, E. Martignago, Arsenal.IT, Treviso (I)

11:30 Vascular medicine training application

A. Sakellarios, E. Petrakis, E. Tripoliti, M. Peroulis, Technical Univ. of Crete (GR)

11:45 RadMiner – improved access to radiological free-text data and images

E. Kotter, A. Gerstmair, Univ. Hosp. Freiburg, K. Simon, C. Simon, P. Daumke, Averbis GmbH, Freiburg (D)

12:00 Break

Thursday, June 28, 2012

8:30–14:00



14th International Workshop on Computer-Aided Diagnosis

Chairman: Kunio Doi, PhD (USA)
Co-Chair: Ulrich Bick, MD (D)

Fermi

9:00 Special Session on Breast CAD – BCAD

Session Chairs: Ulrich Bick, MD (D); Kunio Doi, PhD (USA)

9:00 CAD techniques for the detection of architectural distortion in mammograms
Invited Speaker: R.M. Rangayyan, S. Banik, J.E.L. Desautels, Univ. of Calgary (CDN)

9:30 Computer-aided diagnosis of breast DCE-MRI and DWI
Invited Speaker: R.-F. Chang, Y.-C. Chang, Y.-H. Huang, C.-H. Lin, C.-S. Huang, National Taiwan Univ., Taipei (RC); J.-H. Chen, Univ. of California, Irvine, CA (USA)

10:00 Break

Session Chairs: Ulrich Bick, MD (D); Ruey-Feng Chang, PhD (RC)

10:30 Software for lesion detection in MR images of the breast using texture mapping
A. Ahmed, P. Gibbs, M. Pickles, L. Turnbull, Hull Univ. (UK)

10:45 Texture analysis software for chemotherapy response prediction in breast cancer
A. Ahmed, P. Gibbs, M. Pickles, L. Turnbull, Hull Univ. (UK)

11:00 Segmentation of malignant lesions in breast MRI using distance-weighted three-variable co-occurrence
D. McClymont, D. Kennedy, S. Crozier, Univ. of Queensland, Brisbane, QLD (AUS); A. Mehnert, A. Trakic, Chalmers Univ. of Technology, Signals and Systems, Göteborg (S)

11:15 Local active contour models and Gabor wavelets for an optimal breast region segmentation
A. Mencattini, P. Casti, M. Salmeri, Univ. of Rome Tor Vergata, M.L. Pepe, F.F. Mangieri, A. Ancona, San Paolo Hosp. of Bari (I)

11:30 Computer-aided diagnosis and characterization of breast cancer based on sono-contrast induced spectroscopy analysis
K. Yan, Y. Yu, Thomas Jefferson Univ., Philadelphia, PA, L. Liao, R. Baraldi, Cooper Medical School, Camden, NJ (USA)

11:45 Investigations on a CADx scheme in mammography: evaluating the influence of the nodules contour classifier on radiologists analysis
H. Schiabel, B.R. Nepomuceno Matheus, L. Buffa Vercosa, S. Elias, Univ. of Sao Paulo (BR)

12:00 Break

CAD – EuroPACS Lunch Symposium

Sponsored by Im3D:



12:45 Special Interactive Session on Colon CAD in CTC

Session Chairs: Emanuele Neri, MD (I); Hiro Yoshida, PhD (USA)

12:45 Real-time demonstration of CAD in the detection of polyps by a radiologist without and with use of a commercially available CAD system in CT
E. Neri, Univ. of Pisa, A. Laghi, Univ. of Rome, D. Regge, Univ. of Turin (I), H. Yoshida, Massachusetts General Hosp., Boston, MA (USA)

13:45 Break



18th Computed Maxillofacial Imaging Congress

Chairman: Allan G. Farman, PhD, DSc (USA)

Galilei

8:30 Tutorial on CMI

Session Chairs: Christos Angelopoulos, DDS (USA); Cornelia Kober, PhD (D)

8:30 Tutorial on CMI on The Good, The Bad, and The Ugly – Quality Assurance in Computed Maxillofacial Imaging
Allan G. Farman, PhD, DSc, The Univ. of Louisville (USA), Silvio Diego Bianchi, MD, Univ. degli Studi di Torino (I)

9:30 Quality Control in Computed Maxillofacial Imaging – QCCMI

Session Chairs: Christos Angelopoulos, DDS (USA); Cornelia Kober, PhD (D)

9:30 Automated metal artefact reduction for cone beam computer tomography
G. Eggers, Weinheim Head Center (D)

9:45 Metal-induced streak artifact reduction by statistical reconstruction in X-ray computed tomography image of dento-alveolar region
Y. Hayakawa, J. Dong, K. Abe, Kitami Inst. of Technology, Hokkaido (J)

10:00 Break

10:15 Factors in the accuracy of HU measurement

Invited Speaker: R. Molteni, Verona (I)

11:00 Round Table on Quality Determination in Computed Maxillofacial Imaging
A.G. Farman, The Univ. of Louisville (USA), S.D. Bianchi, Univ. degli Studi di Torino (I), C. Angelopoulos, Columbia Univ., New York, NY (USA), Y. Hayakawa, Kitami Inst. of Technology, Hokkaido (J), R. Molteni, Caprino Veronese (I), Z. Khan, James Graham Brown Cancer Center, Louisville, KY (USA)



CARS

Computer Assisted Radiology and Surgery

Galilei

12:00 Special Session on Autostereoscopic 3D in the Medical Arena: The Next Step in Visualization

Sponsored by Fraunhofer Heinrich Hertz Institute



Fraunhofer

Heinrich Hertz Institute

Session Chairs: Michael Witte (D); Ulrich Leiner (D)

3D visualization in the laparoscopic field – expectations from the surgeon's point of view
Keynote Speaker: Hubertus Feussner, MD, Klinikum rechts der Isar, Munich (D)

(Auto-)stereoscopic 3D – current stage and future developments
U. Leiner, Fraunhofer Heinrich Hertz Inst., Berlin (D)

From bad to good stereo – from stereoscopic to multiview 3D: how minimal-invasive surgery could benefit from the entertainment industry
J. Rurainsky, M. Witte, Fraunhofer Heinrich Hertz Inst., Berlin (D)

Evaluation of 3D in laparoscopy – a methodological approach
A. Schneider, Klinikum rechts der Isar, Munich (D)

13:30 End of Session

Thursday, June 28, 2012 14:00–18:30



16th Annual Conference of the International Society for Computer Aided Surgery

President: Kevin Cleary, PhD (USA)



30th International EuroPACS Meeting

President: Emanuele Neri, MD (I)

Auditorium

14:00 Computer Assisted ENT Surgery – ENT

Session Chair: Gero Strauss, MD, PhD (D)

14:00 Towards a surgical cockpit in ENT surgery

Invited Speaker: G. Strauss, Univ. Hosp. Leipzig (D)

14:15 Image-guided system for endoscopic sinus surgery using two types of information display methods

A. Hattori, N. Suzuki, J. Iimura, N. Otori, H. Moriyama, The Jikei Univ. School of Medicine, Tokyo (J)

14:30 A software tool for preoperative planning of implantable hearing devices

N. Gerber, B. Bell, M. Kompis, C. Stieger, M. Caversaccio, S. Weber, Univ. of Bern (CH)

14:45 Warning navigation system using real-time safe region monitoring for otologic surgery

B. Cho, M. Oka, N. Matsumoto, R. Ouchida, J. Hong, M. Hashizume, Kyushu Univ., Fukuoka (J)

15:00 First experiences with the intraoperative navigated endoscope for FESS

M. Fischer, J. Melasch, A. Dietz, G. Strauss, Univ. Hosp. Leipzig, T.C. Lüth, Technical Univ. Munich (D)

15:15 Break

15:30 Laparoscopic Surgery – Lapar

Session Chair: Makoto Hashizume, MD (J)

15:30 Intra-operative fluorescent cholangiography using indocyanin green during robotic single site cholecystectomy

N.C. Buchs, M. Hagen, F. Pugin, F. Volonté, P. Bucher, E. Schiffer, P. Morel, Univ. Hosp. Geneva (CH)

15:45 Robotic integrated stereoscopic OsiriX 3D volume rendered images surgery

F. Volonté, F. Pugin, N. Buchs, J. Spaltenstein, M. Jung, B. Schiltz, O. Ratib, P. Morel, Univ. Hosp. Geneva (CH)

16:00 Gastrectomy and hepatectomy by multi piercing surgery using 3-mm diameter electronic control forceps for needlescopic surgery

T. Ohdaira, Kyushu Univ. Hosp., Fukuoka (J)

16:15 Development of a multiview camera system for abdominal surgical fields

N. Suzuki, A. Hattori, The Jikei Univ. School of Medicine, Tokyo (J)

16:30 A new laparoscopic surgical skill assessment system for bi-hand coordination using magnetic tracking systems

M. Uemura, S. Ieiri, M. Hashizume, Kyushu Univ., M. Tomikawa, Y. Nagao, Kyushu Univ. Hosp., Fukuoka (J)

16:45 Break

17:00 Image Guided Liver Surgery - Liver

Session Chairs: Heinz-Otto Peitgen, PhD (D); Stefan Weber, PhD (CH)

17:00 Laparoscopic robot-assisted major hepatectomy

U. Boggi, F. Caniglia, S. Signori, F. Vistoli, N. De Lio, V.G. Perrone, Pisa Univ. Hosp. (I)

17:15 Towards higher precision in instrument guided liver surgery: automatic registration of 3D ultrasound with pre-operative MeVis-CT

D. Ribes, M. Peterhans, D. Wallach, S. Weber, Univ. of Bern, S. Anderegg, CAScination AG, Bern, V. Banz, C. Kim-Fuchs, D. Candinas, Bern Univ. Hosp. (CH)

17:30 Development of a surgical template system for application in image guided liver surgery

D. Wallach, M. Peterhans, B. Brun, S. Weber, Univ. of Bern, V. Banz, D. Candinas, Inselspital, Bern (CH)

17:45 Novel portal vein pressure monitoring method for patient with portal hypertension using computational fluid dynamics

Y. Nagao, M. Uemura, T. Akahoshi, M. Tomikawa, M. Hashizume, Kyushu Univ. Hosp., Fukuoka (J)

18:00 Risk maps for liver surgery

C. Hansen, S. Zidowitz, F. Ritter, C. Lange, H.K. Hahn, Fraunhofer MEVIS, Bremen, K.J. Oldhafer, Asklepios Clinic Barmbek, Hamburg (D)

18:15 End of Session

Pacinotti

14:00 Innovative Methodologies for PACS – IM

Session Chair: Erwin Bellon, PhD (B)

14:00 A universal methodology to integrate a standalone CAD into PACS-based environment utilizing DICOM structured reporting

Invited Speaker (Junior researcher supported by EuroPACS): A.H.T. Le, Univ. of Pittsburgh Cancer Inst., Pittsburgh, PA (USA), H. Huang, Tung Wah College, Hong Kong (CHN)

14:15 A new medical image retrieval approach based on curvelet transform

S. Mahmoudi, M. Benjelloun, Univ. of Mons (B)

14:30 Storage and transfer of quantitative polar maps from multimodal cardiac imaging using XML standard format

V. Positano, M. Marinelli, P. Marcheschi, G. Todiere, N. Esposito, G.A. dell'Abbate, S. Puzzuoli, G. Monasterio Foundation, Pisa (I), S.G. Nekolla, Technical Univ. Munich (D)

14:45 Explorations in gesture input for PACS workstation control

C. Edwards, McKesson Corporation, Richmond, British Columbia (CDN)

15:00 Justification of diagnostic examinations in Lucca local health unit

V. Ravaglia, R. Orsini, M. Quattrocchi, A. Marrone, M. Fruzzetti, Azienda USL2, Lucca (I)

15:15 Evaluation of pulmonary nodules on chest CT using iPad2®: preliminary experience

L. Faggioni, E. Neri, P. Sbragia, S. Angeli, L. Cini, D.L. Lauretti, D. Caramella, C. Bartolozzi, Univ. of Pisa (I)

15:30 Break

16:00 Collaborative Projects – CP

Session Chairs: Mansoor Fatehi, MD (IR); Davide Carmella, MD (I)

16:00 Proposal of modular structure reporting: reasons for a collaborative project

Invited Speaker: M. Fatehi, Iranian Society of Radiology, Tehran (IR)

~~**16:15 A publicly available database of thoracic CT scans for computer-aided diagnosis research: the lung image database consortium**~~

~~S.G. Armato III, The Univ. of Chicago, M. McNitt-Gray, The David Geffen School of Medicine, Los Angeles, CA, C. Meyer, Univ. of Michigan, Ann Arbor, MI, A. Reeves, Cornell Univ., Ithaca, NY, L. Clarke, National Cancer Inst., Bethesda, MD (USA)~~

16:30 A novel application of a PAC system: IMPACT, a PACS based collaborative database of radiological studies of mummies

A. Nelson, A. Wade, The Univ. of Western Ontario, G. Garvin, St Joseph's Healthcare, London, Ontario, M. Burrell, Clearcanvas, Toronto, Ontario (CDN)

16:45 ePACS – communication and exchanging project original from Czech Republic

M. Pokorny, ICZ a.s., Brno (CZ)

17:00 PACS-integrated multidisciplinary electronic patient record for oncology

V. Battaglia, D. Lauretti, Univ. of Pisa, F. Ambrogi, Meditec, Florence (I)

17:15 Extension of an enterprise PACS for innovative application. The development of a PACS for “dead bodies” in Azienda Ospedaliero Universitaria di Trieste (AOUTS)

F. Cavalli, M. Beltrame, C. Spagno, Univ. Hosp. Trieste (I)

17:30 End of Session

17:30 EuroPACS General Assembly

Thursday, June 28, 2012

14:00–18:30



14th International Workshop on Computer-Aided Diagnosis

Chairman: Kunio Doi, PhD (USA)
Co-Chair: Ulrich Bick, MD (D)

Fermi

14:00 Panel Discussion on Clinical needs, clinical evaluation, technical evaluation and technical requirements for development of practical CAD systems

Session Chairs: Emanuele Neri, MD (I); Hiro Yoshida, PhD (USA)

Panelists: A. Laghi, Univ. of Rome, D. Regge, Univ. of Turin (I), M. Fatehi, Tehran Univ. of Medical Sciences (IR), E. Pietka, Silesian Univ. of Technology, Gliwice (PL), R.M. Rangayyan, Univ. of Calgary (CDN), S. Worrell, Riverain Technologies, Cleveland, OH (USA), A. Bert, Im3D, Torino (I)

15:30 Break

16:00 Special Session on Thoracic CAD – TCAD

Session Chairs: Rangaraj M. Rangayyan, PhD (CDN); Qiang Li, PhD (USA)

16:00 New advances in computerized detection of lung nodules in thoracic CT
Invited Speaker: Q. Li, Duke Univ., Durham, NC (USA) and Chinese Academy of Sciences, Shanghai (CHN)

16:30 Computer-assisted detection of lung nodules on hi-resolution chest CT images
S. Kharuzhyk, N. Portasova, N.N. Alexandrov National Cancer Center of Belarus, Minsk (BY)

16:45 A multi-thread WEB-based CADe system for nodule detection on chest multislice CT scans
P. Cerello, INFN – National Inst. of Nuclear Physics, A. Stancu, diXit srl, Torino, C. Peroni, Univ. of Torino, M. Barattini, C. Bartolozzi, D. Caramella, M.E. Fantacci, Univ. of Pisa, R. Cataldo, Univ. del Salento, Lecce (I), E. Lopez Torres, CEADEN – Center of Applied Technologies and Nuclear Development, Habana (C)

17:00 Adaptive segmentation method for computer-aided volumetry of solid and subsolid lung nodules on CT
S. Matsumoto, M. Nishio, Y. Ohno, K. Sugimura, Kobe Univ. Graduate School of Medicine, H. Yamagata, Toshiba Medical Systems Corporation, Otawara (J)

17:15 Comparative assessment of local binary patterns and related texture features for classification of pulmonary emphysema in low-dose CT images
M. Nishio, S. Matsumoto, Y. Ohno, H. Koyama, K. Sugimura, Kobe Univ. (J)

17:30 A method for automated detection of lymph nodes from two-phase 3D contrasted chest CT images
T. Kitasaka, Aichi Inst. of Technology, Toyota, M. Kishimoto, M. Oda, S. Iwano, K. Mori, Nagoya Univ. (J)

17:45 Computer aided detection of pulmonary embolism in CTA images
Y. Ebrahimdoost, T. Ellis, Z. Falah Shojaaee, J. Dehmeshki, Kingston Univ. London (UK), S.D. Qanadli, Univ. of Lausanne (CH)

18:00 A method for object detection and segmentation in medical images
M. Alilou, V. Kovalev, Belarus National Academy of Sciences, Minsk (BY)

18:15 End of Session



18th Computed Maxillofacial Imaging Congress

Chairman: Allan G. Farman, PhD, DSc (USA)

Galilei

13:30 Computed Maxillofacial Imaging in Dental Implantology – CMIDI

Session Chairs: Zafrulla Khan, DDS, MS (USA); Dirk Schulze, MD, DMD (D)

13:30 New concepts in guided implantology: hex and thread timing, and implant phase
G.L. Telara, Studio Lippi Telara, Guamo (I)

13:45 Minimally invasive insertion of dental implants based on computer supported planning
S. Schultze-Mosgau, C.K. Mueller, Univ. Hosp. Jena (D)

14:00 New registration method for customized dental implant guiding system
Y.-J. Kim, J.-H. Choi, S.-H. Park, Korea Inst. of Science and Technology, T.-K. Lee, Y. Kim, J.-K. Jung, EZplant, J.-M. Park, Ehwa Womans Univ., Seoul (ROK)

14:15 SimViewX – an IGSTK-driven augmented-reality application in dental implantology
Z.R. Bardosi, W. Freysinger, M. Truppe, Innsbruck Medical Univ. (A)

14:30 Automatic bone and tooth detection for CT-based dental implant planning
D. Kainmüller, T.D. Nguyen, H. Lamecker, S. Zachow, Zuse Inst. Berlin (D)

14:45 Break



Computer Assisted Radiology 26th International Congress and Exhibition

Chairmen: Stanley Baum, MD (USA)
Co-Chair: Carlo Bartolozzi, MD (I)

Galilei

15:00 Computed Tomography – CT

Session Chair: Elizabeth Beckmann, BSc (UK)

15:00 Future directions of cone beam imaging
Invited Speaker: R. Maroldi, Univ. of Brescia (I)

15:15 Improvements of MDCTA images applied to clipped cerebral aneurysms
G. Lupi, M. Carbone, V. Ferrari, M. Ferrari, F. Mosca, R. Vannozzi, Univ. of Pisa (I)

15:30 WEIT A Wearable Electronic Impedance Tomography for portable monitoring applications
G. Baldi, D. Mazzei, Univ. of Pisa (I)

15:45 Therapy response evaluation of malignant lymphoma in multi-slice CT: should manual 2D measurements be replaced by 3 D measurements? Results of a multicenter study

C. Schuelke, B. Buerke, J. Wessling, A. Knauer, W. Heindel, Univ. of Muenster, A. Graser, Univ. Hosp. Munich, M. Fabel, Univ. of Kiel, A. Kiessling, Univ. of Marburg, D. Pinto dos Santos, Univ. of Mainz (D)

16:00 Software for CT effective doses estimation on the basis of dose distribution curves
S. Kruchinin, M. Zelikman, Research and Practical Centre of Medical Radiology, Moscow (RUS)

16:15 Application of segmentation and 3D rendering techniques in the mummies of Cangrande della Scala (1291-1329) and S. Giacomo della Marca (1391-1476)
G. Fornaciari, V. Giuffra, M. Sabato, S. Minozzi, D. Caramella, V. Ferrari, F. Mosca, Univ. of Pisa, L. Ventura, San Salvatore Hosp., L'Aquila, G. Schenal, AOUI Borgo Trento Hosp., Verona (I)

17:00 Magnetic Resonance – MR

Session Chair: Stephen Riederer, PhD (USA)

17:00 The expanding universe of MRI
Invited Speaker: S.J. Riederer, Mayo Clinic, Rochester, MN (USA)

17:15 Robust DKI computation method and its application for building brain atlas with multiple diffusion MRI parameters
Y. Masutani, The Univ. of Tokyo Hosp., S. Aoki, Juntendo Hosp., Tokyo (J)

17:30 Atlas-based fiber reconstruction from diffusion tensor MRI data
S. Barbieri, J. Klein, H.K. Hahn, Fraunhofer MEVIS, Bremen, M.H.A. Bauer, C. Nimsky, Univ. of Marburg (D)

17:45 Estimation of fiber bundle sections for interactive neural fiber analysis
A. Barmpoutis, S. Ray, W. O'Dell, Univ. of Florida, Gainesville, FL (USA)

18:00 Smartphone interface for interactive MRI
J. Tokuda, F.A. Jolesz, C.M. Tempny, N. Hata, Brigham and Women's Hosp., Boston, MA, L. Pan, C.H. Lorenz, Siemens Corporate Research, Baltimore, MD (USA)

18:15 End of Session

Friday, June 29, 2012

8:30–14:30



4th EuroNOTES / IFCARS / ISCAS Workshop on NOTES: An Interdisciplinary Challenge

Chairman: Hubertus Feussner, MD (D)



Computer Assisted Radiology 26th International Congress and Exhibition

Chairmen: Stanley Baum, MD (USA)

Co-Chair: Carlo Bartolozzi, MD (I)

Auditorium

8:30 Challenges in computer assisted endoscopic surgery

Invited Speaker: H. Feussner, Klinikum rechts der Isar, Munich (D)

8:45 A thin and high-image-quality 3-D endoscope using a single CCD camera and a pneumatic vibration mechanism

H. Kamiuchi, K. Kuwana, T. Dohi, K. Masamune, The Univ. of Tokyo, T. Fukuyo, Shinko Optical Co., Ltd., Tokyo (J)

9:00 Magnetic and inertial sensor fusion for the localization of endoluminal diagnostic devices

M. Salerno, F. Mulan, A. Menciassi, Sant'Anna School of Advanced Studies, Pontedera, R. Rizzo, A. Landi, Univ. of Pisa (I)

9:15 MR-image guided surgical system for endoscopic surgery

S. Naka, T. Tani, H. Murayama, S. Morikawa, Y. Kurumi, Shiga Univ., H. Haque, GE Healthcare, Tokyo (J)

9:30 Toward fiducial-free registration procedures for endobronchial ultrasound bronchoscopic navigation

K. Mori, X. Luo, T. Kitasaka, Nagoya Univ. (J)

9:45 A feasibility study of optical flow-based navigation during colonoscopy

N. van der Stap, R. Reilink, S. Misra, I. Broeders, F. van der Heijden, Univ. of Twente, Enschede (NL)

10:00 End of Workshop



16th Annual Conference of the International Society for Computer Aided Surgery

President: Kevin Cleary, PhD (USA)

10:15 Computer Assisted Orthopaedic Surgery – CAOS

Session Chairs: Chiaki Hamanishi, MD (J); Randy Evan Ellis, PhD (CDN)

10:15 Semi-automatic robot assistance system for retractor holding tasks during hip surgery

R. Gundling, J. Hesser, H.-P. Scharf, M. Schwarz, M. Merscher, Medical Faculty Mannheim at Heidelberg Univ., V. Vieira, A.T. Nguyen, R. Boesecke, J. Brodersen, Precisis AG, Heidelberg (D)

10:30 Preoperative shaping of acetabular reinforcement cage on individual pelvic plastic model for hip surgery with severe defect

H. Iguchi, H. Mitsui, G. Kuroyanagi, S. Murakami, N. Watanabe, Nagoya City Univ., Y. Takeichi, Aichi Medical Univ., H. Motai, Motai Clinic, Tokai (J)

10:45 Three-dimensional MRI study of the hip prosthesis

E. Bonicoli, V. Zampa, L. Andreani, A. Baluganti, M. Marletta, M. Lisanti, Univ. Hosp. Pisa (I)

11:00 Constraint-based orthopedic surgery planning system for total hip replacement and total knee arthroplasty

S. Park, N. Kim, Asan Medical Center, Seoul, H.-C. Cho, C.-H. Lee, Hyundai Heavy Industries, Yongin (ROK)

11:15 A wrist-stabilization device for percutaneous image-guided fracture fixation

R.E. Ellis, G. Allan, E. Smith, D. Pichora, Queen's Univ., Kingston, Ontario, F. MacLeod, Univ. of Toronto (CDN)

11:30 The accuracy of a mechanical cup alignment guide in THA through direct anterior and posterior approaches measured with CT-based navigation

Y. Maeda, N. Nakamura, M. Kitada, Kyowakai Hosp., Osaka, M. Takao, T. Sakai, T. Nishii, N. Sugano, Osaka Univ. (J)

11:45 Surgical navigation can detect aspherical hip motion

E.J. Smith, B. Rasquinha, M. Kunz, G.C.A. Wood, J. Rudan, R.E. Ellis, Queen's Univ., Kingston, Ontario (CDN)

12:00 Surgical Navigation – SN

Session Chair: Ramin Shahidi, PhD (USA)

12:00 A laser projector augmented drill for surgical applications: design and feasibility study

J.-P. Kobler, M. Kuhlemann, T. Ortmaier, Leibniz Univ. Hannover (D)

12:15 Real-time 3D ultrasound surgical navigation system showing high position accuracy for moving targets

I. Sato, R. Nakamura, Chiba Univ. (J)

12:30 Magnetic navigation for intra-cardiac interventions using tracked US: an animal study

L. Gu, Z. Luo, Shanghai Jiaotong Univ., J. Cai, W. Su, Q. Zhao, Ruijing Hosp., Shanghai (CHN)

12:45 Fast and accurate fiducials tracking and visualisation for MRI-guided interventions

D. Bruijic, F. Galassi, M. Rea, Imperial College, London (UK)

13:00 ISCAS General Assembly (taking place in Room Galilei)

Pacinotti

8:30 Cardiovascular Imaging – CVI

Session Chairs: André J. Duerinckx, MD, PhD (USA); Osman M. Ratib, MD, PhD (CH)

8:30 The advances in quantification of cardiac risk assessment with cardiac CT imaging

Invited Speaker: A.J. Duerinckx, Howard Univ. College of Medicine, Washington, DC (USA)

8:45 A hybrid algorithm for automatic heart delineation in CT angiography

I. Melki, H. Talbot, J. Cousty, L. Najman, Univ. Paris-Est, Noisy-le-Grand, C. Pruvot, J. Knoploch, L. Launay, GE Healthcare, Buc (F)

9:00 Automatic model-based contour detection of left ventricle myocardium from cardiac CT images

T. Sugiyama, Y. Sakata, S. Nitta, T. Okazaki, N. Matsumoto, Y. Fujisawa, Toshiba Corporation, Kanagawa (J)

9:15 Morpho-functional imaging of coronary anatomy and left ventricular perfusion obtained by cardiac CT

P. Marraccini, G. Coppini, R. Favilla, A. Mazzarisi, National Research Council – CNR, M. Schlueter, D. Neglia, G. Monasterio Foundation, Pisa, L. Faggioni, C. Bartolozzi, Univ. of Pisa, M. Bianchi, Univ. Hosp. Pisa, S. Diciotti, M. Mascali, Univ. of Florence (I)

9:30 Epicardial fat volume assessment in cardiac CT

G. Coppini, R. Favilla, D. Moroni, O. Salvetti, A. Mazzarisi, National Research Council – CNR, Pisa, L. D'Errico, L. Faggioni, C. Bartolozzi, Univ. of Pisa, M. Ciardetti, M. Schlueter, M. Coceani, G. Monasterio Foundation, Pisa, M. Bianchi, Univ. Hosp. Pisa, F. Salituri, Univ. of Catanzaro (I)

9:45 Left ventricle segmentation on cardiac MRI images using the kernelized weighted C-means clustering

M. Bugdol, E. Pietka, Silesian Univ. of Technology, Gliwice (PL)

10:00 A software application for three-dimensional visualization and quantification of scars and conducting channels based on pre-procedure CE-MRI in patients with ventricular tachycardia

V. Barbarito, L. Carotenuto, L. Serra, O. Cámara, A. Frangi, Univ. Pompeu Fabra, J. Fernández-Armenta, A. Berrueto, Hosp. Clinic, Barcelona (E)

10:15 Break

Session Chairs: André J. Duerinckx, MD, PhD (USA); Michael W. Vannier, MD (USA)

10:30 Motion tracking of the right ventricle from magnetic resonance tagged images

A. Khalifa, L. Nasser, Helwan Univ., A. Fahmy, Nile Univ., Cairo (ET)

10:45 A new web-based educational tool for training in multimodal cardiac imaging

G.A. L'Abbate, G. Todiere, P. Marchesini, V. Positano, D. Neglia, G. Monasterio Foundation, Pisa, M. Marinelli, N. Esposito, S. Puzzuoli, Inst. of Clinical Physiology, Pisa, G. Zingoni, Univ. Hosp. Pisa (I)

11:00 Towards real-time cardiac ultrasound to MRI registration using the coherent point drift algorithm for respiratory motion tracking

C. Hatt, A. Raval, Univ. of Wisconsin, Madison, WI (USA)

11:15 Automated anatomical labeling of abdominal arteries extracted from CT images based on machine learning

K. Mori, H. Bui Huy, T. Matsuzaki, M. Oda, M. Fujiwara, Nagoya Univ., T. Kitasaka, Aichi Inst. of Technology, School of Information Science, Toyota, K. Misawa, Aichi Cancer Center, Nagoya (J)

11:30 Automated anatomical labeling of abdominal arteries from CT data based on optimal path finding between segmented organ and aorta regions: a robust method against topological variability

Y. Suzuki, T. Okada, M. Hori, N. Tomiyama, Y. Sato, Osaka Univ., F. Yokota, Kobe Univ. (J), M. Linguraru, Children's National Medical Center, Washington, DC (USA)

11:45 Three dimensional skeletonization and symbolic description in vascular imaging: preliminary results

L. Verscheure, N. Reyns, N. Betrouni, S. Mordon, M. Vermandel, INSERM, Lille, V. Le Thuc, Univ. Hosp. Lille, L. Peyrodie, Univ. of Lille (F)

12:00 Vascular decomposition using weighted approximate convex decomposition

A. Chowriappa, P. Scott, T. Kesavadas, The State Univ. of New York, S. Natarajan, P. Kahn, Millard Fillmore Gates Hosp., Buffalo, NY (USA)

12:15 Break

Friday, June 29, 2012

9:00–13:00



14th International Workshop on Computer-Aided Diagnosis

Chairman: Kunio Doi, PhD (USA)
Co-Chair: Ulrich Bick, MD (D)

Fermi

9:00 Special Session on Abdominal CAD – ACAD

Session Chairs: Hiro Yoshida, PhD (USA); Hiroshi Fujita, PhD (J)

9:00 The IMPACT 2 study: implications to CAD for CT colonography

Invited Speaker: Daniele Regge, Univ. of Torino (I)

9:30 Content based image retrieval for liver lesions as computer-aided-diagnosis-system (CADx)

Invited Speaker: M. Hammon, P. Dankerl, M. Uder, A. Cavallaro, Univ. Hosp. Erlangen, M. Costa, A. Tsymlal, S. Seifert, M. Sühling, Siemens AG, Erlangen (D)

10:00 Break

10:30 Additional learning of CAD software based on multicenter trial in teleradiology environment

Y. Nomura, Y. Masutani, N. Hayashi, S. Miki, M. Nemoto, S. Hanaoka, T. Yoshikawa, K. Ohtomo, The Univ. of Tokyo Hosp. (J)

10:45 A gastric lymph node detection method from 3D abdominal CT images using a multi-shape and multi-scale ellipsoidal structure detection filter

M. Oda, M. Fujiwara, K. Mori, Nagoya Univ., T. Kitasaka, Aichi Inst. of Technology, Toyota, K. Misawa, Aichi Cancer Center, Nagoya (J)

11:00 Advanced postprocessing and CAD for coronary imaging: performance of two novice readers with CAD versus expert reader without CAD

P. Dankerl, M. Hammon, M. Uder, A. Cavallaro, R. Janka, Univ. Hosp. Erlangen, A. Tsymlal, M. Kelm, Siemens AG, Erlangen (D)

11:15 A study on random forests for computer-aided detection in computed tomography colonography

J.Z. Liang, B. Song, W. Zhu, State Univ. of New York at Stony Brook (USA), G. Zhang, Fourth Military Medical Univ., Xian (CHN)

11:30 Computer aided diagnosis in CT colonography based on bi-labeled classifiers

Z. Liang, B. Song, H. Zhu, Stony Brook Univ. (USA), G. Zhang, H. Lu, Fourth Military Medical Univ., Xian (CHN)

11:45 Computer-aid detection and stage assessment of bladder cancer based on MR image

H. Lu, Z. Shi, Z. Wu, G. Zhang, Fourth Military Medical Univ., Xian (CHN)

12:00 Computer Aided Simple Triage (CAST) for Coronary CT Angiography (CCTA)

R. Goldenberg, D. Eilot, G. Begelman, E. Walach, E. Ben-Ishai, Rcadia Medical Imaging Ltd., N. Peled, Lady Davis Carmel Medical Center, Haifa (IL)

12:15 Break



Editorial Board Meeting of the International Journal of CARS:

Friday, June 29, 2012 07:30



18th Computed Maxillofacial Imaging Congress

Chairman: Allan G. Farman, PhD, DSc (USA)

Galilei

8:30 Image Guidance and Computed Maxillofacial Imaging – IGCMCI

Session Chairs: Roberto Molteni (I); Allan G. Farman, PhD, DSc (USA)

8:30 Ultrasound and CT correlations for maxillofacial imaging

Invited Speaker: C. Angelopoulos, Columbia Univ., New York, NY (USA)

9:30 Computed 3D-photo predictions versus real postoperative 3D-photos in maxillofacial orthognathic surgery

A. Terzic, T. Schouman, P. Scolozzi, Univ. Hosp. Geneva (CH)

9:45 A 3-dimensional analysis of the mandible submental bone augmentation procedure

L. Verhamme, T. Maal, A. Soehardi, S. Bergé, G. Meijer, Radboud Univ. Medical Centre, Nijmegen (NL)

10:00 Break

10:15 Rehabilitation options of maxillofacial defects using CAD-CAM technology and rapid prototyping

L. Ciocca, M. Fantini, C. Marchetti, R. Scotti, Univ. of Bologna (I)

10:30 Validation of a novel automated approach based on active appearance model for three-dimensional surface rendering of condyles using Cone-Beam Computer Tomography (CBCT) data

T. Xi, B. Van Loon, L. Verhamme, S. Bergé, T. Maal, St. Radboud Univ. Medical Center, Nijmegen, D.-J. Kroon, Univ. of Twente (NL)

10:45 Finite element simulation of a human mandible with an extended cystic lesion respecting tissue anisotropy and inhomogeneity

C. Kober, Faculty of Life Sciences, Hamburg (D), C. Hellmich, A. Fritsch, Technical Univ. of Vienna (A), A. Gurin, V. Komlev, Central Scientific Research Inst. of Oral and Maxillofacial Surgery, Moscow (RUS)

11:00 Development of three-dimensional graphic viewer software using game controller device and medical image displaying

Y. Hayakawa, J. Dong, Y. Kamada, K. Abe, Kitami Inst. of Technology, Hokkaido (J)

11:15 A novel approach for three-dimensional kinematic measurement of temporomandibular joint using X-ray fluoroscopy

T. Yamazaki, A. Matsumoto, K. Matsumoto, N. Kakimoto, Y. Yura, K. Sugamoto, Osaka Univ. (J)

11:30 Detection of artificially created horizontal root fracture using different limited CBCT units: a preliminary study

K. Kamburoglu, B. Onder, E. Kolsuz, Ankara Univ., T. Ozen, Gulhane Military Academy, Ankara (TR)

11:45 End of Session



13th IFCARS/SPIE/EuroPACS/ISCAS Joint Workshop on Surgical PACS and the Digital Operating Room

Chairmen: Osman M. Ratib, MD, PhD (CH),
Heinz U. Lemke, PhD (D)

Galilei

12:00 Systems Design and Applications – SDA

Session Chair: Osman M. Ratib, MD, PhD (CH); Heinz U. Lemke, PhD (D)

12:00 Intraoperative platforms – connecting the future of medicine

Invited Speaker: C.L. Amato, Cannon Design, Los Angeles, CA (USA), O. Ratib, Univ. Hosp. Geneva (CH)

12:15 SmartOR – plug & play in the operating room

J. Benzko, B. Marschollek, K. Radermacher, RWTH Aachen Univ., M.-A. Findik, Richard Wolf GmbH, Knittlingen (D)

12:30 Data capturing in the operating theater for identification of the intraoperative workflow

A. Schneider, D. Wilhelm, M. Kranzfelder, A. Fiolka, H. Feussner, Klinikum rechts der Isar, Munich (D)

12:45 Automatic knowledge-based recognition of low-level surgical tasks

F. Lajal, D. Bouget, P. Jannin, Univ. of Rennes 1, L. Riffaud, Hosp. Pontchaillou, Rennes (F)

13:00 Break

To be continued on page 17

Friday, June 29, 2012

13:00–18:30



CARS Computer Assisted Radiology and Surgery



Computer Assisted Radiology 26th International Congress and Exhibition

Chairmen: Stanley Baum, MD (USA)

Co-Chair: Carlo Bartolozzi, MD (I)

Auditorium

13:00 Luncheon Symposium on The Digital Operating Room: Redesign of Interventional Processes Sponsored by Vital Images

Chair: Kirby G. Vosburgh, PhD (USA)

VITAL
A Toshiba Medical Systems Group Company

From conventional to model-guided surgery

R.M. Satava, University of Washington Medical Center (USA)

Images in the OR – how surgeons like it

O.M. Ratib, Univ. Hosp. of Geneva (CH)

Surgical Management and Guidance System (SMGS): presentation of various data model in the Surgical Cockpit

G. Strauss, Univ. Hosp. Leipzig (D)

A new approach towards risk management for smartOR modules

K. Radermacher, RWTH Aachen Univ. (D)

The need for standards and communication

D. Hilderbrand, Vital Images, Edinburgh (UK)

Pacinotti

14:00 Ultrasound – US

Session Chair: Carlo Bartolozzi, MD (I)

14:00 Evaluation of force, torque, and range of motion exhibited during abdominal ultrasound exam of human subjects

K.P. Davenport, E. Wilson, K. Cleary, Children's National Medical Center, D. Swerdlow, Georgetown Univ. Hosp., Washington, DC, K. Leroy, J. Goldie, B. LaBrecque, Infoscitex, Waltham, MA (USA)

14:15 Material characterization for elastosonographic phantoms

R. Piazza, S. Condino, M. Carbone, V. Ferrari, EndoCAS Center, Pisa, M. Lorenza, F. Di Puccio, D. Caramella, F. Mosca, P. Forte, Univ. of Pisa (I)

14:30 Comparison of finite element and US elastograms of a breast phantom

L. Mattei, F. Di Puccio, P. Forte, Univ. of Pisa, C. Giaconi, Univ. Hosp. Pisa (I)

14:45 Role of elastography in diagnostic evaluation and differential diagnosis of intratesticular scrotal masses

G. Morelli, Univ. Hosp. Pisa (I)

15:00 Computer Assisted Methods in Peripheral vascular Ultrasound: CAMPUS

C. Palombo, V. Napoli, D. Caramella, Univ. of Pisa, M. Kozakova, N. Guraschi, Esaote SpA, Genova, S. Ricci, P. Tortoli, Univ. of Florence (I)

15:15 Break

15:30 Digital Radiography – DR

Session Chair: Leonard Berliner, MD (USA)

15:30 Plain radiographs, computed tomography, and 3D reconstruction: a comparative analysis of measured displacement for isolated greater tuberosity fractures of the proximal humerus

J. Mutch, D. Rouleau, N. Hagemester, Hosp. Sacre-Coeur, Montreal, Quebec (CDN)

15:45 Usefulness of temporal subtraction images based on a pixel matching technique in screening digital chest radiography

A. Sugimoto, Y. Uchiyama, K. Shigehiko, J. Shiraishi, Kumamoto Univ., N. Higashi, Japan Red Cross, Kumamoto (J)

16:00 Effect of image lag and influencing factor in fluoroscopy images obtained with a dynamic Flat-Panel Detector (FPD)

H. Kawashima, H. Iida, Kanazawa Univ. Hosp., R. Tanaka, K. Ichikawa, K. Matsubara, S. Sanada, Kanazawa Univ. (J)

16:15 Complex radiological diagnosis of exacerbation of chronic obstructive pulmonary disease

N. Gorbunov, V. Laptev, Novosibirsk State Medical Univ. (RUS)

16:30 Break

16:45 Computer Assisted Radiation Therapy – CART

Session Chair: Kiyonari Inamura, PhD (J)

16:45 System and application concept of a novel robotic component for phantoms used in 4D-radiotherapy and 4D-medical imaging

H. Arenbeck, K. Bollue, D. Abel, RWTH Aachen Univ. (D)

17:00 Toward real scenario in intra-operative electron radiation therapy

V. Garcia-Vazquez, E. Marinetto, L. Camacho-Márquez, M. Desco, J. Pascau, Unidad de Medicina y Cirugía Experimental, J.A. Santos-Miranda, F. Calvo, Hosp. General Universitario Gregorio Marañón, Madrid (E)

17:15 Exploration of frameless Stereotactic Radiosurgery (SRS) using Volumetric Modulated Arc Therapy (VMAT) and 3D optical surface image guidance

Y. Song, C. Obcemea, B. Mueller, Q. Zhang, Memorial Sloan-Kettering Cancer Center, Sleepy Hollow, NY (USA)

17:30 Respiratory motion prediction by fuzzy logic approaches: ANFIS vs interval type-2 non singleton fuzzy system

M. Kakar, Oslo Univ. (N), M. Salmeri, A. Mencattini, Univ. of Rome Tor Vergata, Rome (I)

17:45 Segmentation of iodine brachytherapy implants in fluoroscopy

P. Fallavollita, Technical Univ. Munich (D), E. Mout, G. Fichtinger, Queen's Univ., Kingston, Ontario (CDN), W.J. Morris, Vancouver Cancer Centre, S. Salcudean, Univ. of British Columbia, Vancouver, British Columbia (CDN), E. Dehghan, The Johns Hopkins Univ., Baltimore, MD (USA)

18:00 Clinical application algorithms for Beam's eye view video monitor

J. Barbieri, A. Ingenito, M. Tuna, A. Ndlovu, Hackensack Univ. Medical Center (USA)

18:15 End of Session



16th Annual Conference of the International Society for Computer Aided Surgery

President: Kevin Cleary, PhD (USA)

Auditorium

14:00–17:00 4th ISCAS Surgical Workshop: Image Guidance in Minimally Invasive Cardiac Surgery

Session Chairs: Terry Peters, PhD (CDN); Michael Chu, MD (CDN)

14:00 Philosophical aspects of image-guidance in beating heart surgery

G. Guiraudon, Western Univ., London, Ontario (CDN)

14:15 Critical role of imaging in TAVI

M. Chu, Western Univ., London, Ontario (CDN)

14:30 TAVI guided with intra-procedure CT

P. Kiefer, Univ. of Leipzig (D)

14:45 Transapical mitral valve repair of chordae tendinae

R. Daley, Mayo Clinic, Rochester, MN (USA)

15:00 Break

15:30 Image-guidance for beating heart mitral valve repair

P. Denti, Hospital San Raffaele, Milan (I)

15:45 Image-guidance for Thoracic Endovascular Aortic Repair (TEVAR)

L. Gu, Shanghai Jiaotong University (CHN)

16:00 The role of image guidance in valve reconstructive surgery

J. Kobayashi, National Cardiovascular Centre, Osaka (J)

16:15 Future of integrated image guidance in heart surgery

R. Ionasec, Siemens Corporate Research, Princeton, NJ (USA)

16:30 Panel Discussion

15:00 End of Workshop

17:00 Image Processing and Visualization – IPV

Session Chair: Ken Mori, PhD (J)

17:00 Automatic generation of real-time deformable parametric model of the aorta for a VR-based catheterism guidance system

P. Fontanilla Arranz, B. Rodríguez Vila, P. Sánchez-González, E.J. Gómez Aguilera, A. Dore, Technical Univ. of Madrid (E), M. Sette, J. Vander Sloten, Katholieke Univ. Leuven (B)

17:15 Non-iterative partial view 3D ultrasound to CT registration in ultrasound guided computer assisted orthopedic surgery

I. Hacıhaliloglu, D. Wilson, M. Gilbert, M. Hunt, P. Abolmaesumi, Univ. of British Columbia, Vancouver, British Columbia (CDN)

17:30 Unscented Kalman filter for robust optical tracking within the IGSTK framework

A. Vaccarella, E. De Momi, G. Ferrigno, Technical Univ. of Milan (I), A. Enquobahrie, Kitware Inc., Carboro, NC (USA)

17:45 Cardiac scar detection, segmentation and quantification in MRI images for ICD treatment planning

M.A. González Ballester, L. Lara Rodríguez, S. Vera, F. Perez, J. Herrero Jover, Alma IT Systems, M. Bordone, G. Gavidia, E. Soudah, Univ. of Catalunya, Barcelona (E), N. Lanconelli, R. Morisi, Univ. of Bologna (I), N. Curzen, Univ. Hosp. Southampton (UK)

18:00 A comparison of depth enhancing perceptual cues for vessel visualization in neurosurgery

M. Kersten-Oertel, S.J.S. Chen, D.L. Collins, McGill Univ., Montreal, Quebec (CDN)

Friday, June 29, 2012

14:00–18:30



14th International Workshop on Computer-Aided Diagnosis

Chairman: Kunio Doi, PhD (USA)
Co-Chair: Ulrich Bick, MD (D)

Fermi

14:00 Special Session on Brain CAD – BRCAD

Session Chairs: Martin Fiebich, PhD (D); Qiang Li, PhD (USA)

14:00 Prediction of the outcome of subjects with mild cognitive impairment: whole-brain analysis of structural MRI data

A. Retico, M.E. Fantacci, Univ. of Pisa (I)

14:15 Computerized detection of metastatic brain tumors in brain MR images

T. Takenaga, S. Katsuragawa, Y. Uchiyama, T. Hirai, J. Shiraishi, Kumamoto Univ. (J)

14:30 A CAD system for cerebral gliomas based on 3D texture features in diffusion tensor MR images

G. De Nunzio, M. Donatovi, Univ. of Salento, Lecce, M. Rucco, Univ. of Camerino, G. Pastore, Ist. di Ricerche Cliniche Ecomedica Empoli, M. Cazzato, Sapienza Univ. of Rome, A. Castellano, A. Falini, Univ. Vita-Salute San Raffaele, Milan, L. Bello, Univ. of Milan (I)

14:45 Brain tumour detection and neovascularity assessment in MR images

P. Szwarc, J. Kawa, E. Pietka, Silesian Univ. of Technology, Gliwice (PL)

15:00 Classification of ischemic brain tissue in acute ischemic stroke in early CT images with texture analysis

Q.P. Thomson, J. Modi, S.B. Coutts, A.M. Demchuk, M.D. Hill, S.K. Boyd, M. Goyal, Univ. of Calgary (CDN), J.R. Mitchell Mayo Clinic, Scottsdale, AZ (USA)

15:15 End of Session



CARS Computer Assisted Radiology and Surgery

Fermi

15:30 Special Session on Pediatrics

Session Chair: Kevin Cleary, PhD (USA)

15:30 Overview of pediatric surgery

S. Himidan, The Hosp. for Sick Children, Toronto, Ontario (CDN)

15:45 Challenges in pediatric laparoscopic surgery

K.P. Davenport, Children's National Medical Center, Washington, DC (USA)

16:00 Laparoscopic living donor hepatectomy for pediatric liver transplantation

U. Boggi, Pisa Univ. Hosp. (I)

16:15 Pediatric interventional procedures

E. Bozzi, R. Cioni, Univ. of Pisa (I)

16:30 Augmented reality for laparoscopic pediatric surgery

R. Shekhar, Children's National Medical Center, Washington, DC (USA)

16:45 Discussion

17:00 End of Session



13th IFCARS/SPIE/EuroPACS/ISCAS Joint Workshop on Surgical PACS and the Digital Operating Room

Chairmen: Osman M. Ratib, MD, PhD (CH),
Heinz U. Lemke, PhD (D)

Galilei

14:15 Systems Design and Applications – SDA (continued)

Session Chair: Osman M. Ratib, MD, PhD (CH); Heinz U. Lemke, PhD (D)

14:15 Virtual manipulation of medical images with hand gestures in the operating room

F. Klumb, T. Strgar, K. Ahmed, Health School of Geneva, V. Dubois-Ferriere, N. Roduit, C. Barea, P. Hoffmeyer, Univ. Hosp. Geneva (CH)

14:30 A novel system for hands free manipulation of digital X-rays in a sterile environment using consumer electronics and software

M. Frame, Forth Valley Royal Hosp., Hyndland (UK)

14:45 Touch-less control of operating room lights

A. Schlaefer, F. Hartmann, Univ. of Lübeck (D)

15:00 Clinical trials of the non-touch intraoperative image controllable interface system using KINECT™

K. Yoshimitsu, Y. Muragaki, T. Maruyama, T. Saito, T. Suzuki, S. Ikuta, M. Tamura, J. Okamoto, H. Endo, H. Iseki, Tokyo Women's Medical Univ. (J)

15:15 End of Session



CARS Workshops and Special Events

Galilei

15:30 – 18:30 Tutorial on Surgical Process Modelling and Surgical Workflow

Thomas Neumuth, PhD, Univ. of Leipzig (D), Laurent Riffaud, MD, Univ. of Rennes (F)

The term “Surgical Workflow” is used in a variety of contexts and for different purposes, each having one thing in common: Modeling the processes in the operating room. The approaches to this are manifold: From human or technical observation of the surgical processes and their abstract modeling to the manual description of complex surgical cases there are different ways to acquire surgical workflows. The workflows themselves are used to answer specific clinical questions, for requirements engineering for software systems or to drive higher level clinical applications.

The tutorial gives an introduction to the field of surgical process modeling and the design of surgical workflow management systems. The major steps for successfully using the methods are presented: Methods for data acquisition and modeling, the generation of generic models and its application to clinical use cases. The speakers give examples from their experience in analyzing over 1000 clinical processes from various surgical domains for different purposes. The tutorial concludes with a practical session, where participants can experience the use of the presented methods.

Special registration required.

Saturday, June 30, 2012

8:30–14:00



16th Annual Conference of the International Society for Computer Aided Surgery

President: Kevin Cleary, PhD (USA)



Computer Assisted Radiology 26th International Congress and Exhibition

Chairmen: Stanley Baum, MD (USA)

Co-Chair: Carlo Bartolozzi, MD (I)

Auditorium

08:30 Surgical Robotics and Instrumentation – SRI

Session Chairs: Takeyoshi Dohi, PhD (J); Paolo Dario, MD (I)

8:30 Biorobotics for surgery

Keynote Speaker: Paolo Dario, PhD, Scuola Superiore Sant'Anna, Pontedera (I)

9:00 Remote active magnetic actuation for a single-access surgical robotic manipulator

P. Valdastrì, C. Di Natali, Vanderbilt Univ., Nashville, TN (USA)

9:15 A new robotic system for single-incision laparoscopic surgery: preliminary experience

G. Basili, D. Pietrasanta, O. Goletti, Pontedera Hosp., G. Petroni, A. Menciassi, Sant'Anna School of Advanced Studies, Pontedera (I)

9:30 Surgical bedside master console for neurosurgical robotic system

J. Arata, M. Takagi, T. Hori, T. Miyagi, J. Fujimoto, Nagoya Inst. of Technology, Y. Kajita, Y. Hayashi, Nagoya Univ., H. Kenmotsu, M. Hashizume, Kyushu Univ., Fukuoka, K. Chinzei, National Inst. of Advanced Industrial Science and Technology (AIST), Tsukuba (J)

9:45 Robotic probe handling assistance by coordinated motion control for echography

S. Onogi, Y. Urayama, S. Irisawa, K. Masuda, Tokyo Univ. of Agriculture and Technology (J)

10:00 Intuitive touch panel control system with tablet PC

J. Shimada, K. Ito, D. Kato, M. Shimomura, H. Tsunozuka, K. Terauchi, K. Ichise, S. Ishihara, Kyoto Prefectural Univ. of Medicine, Kyoto (J)

10:15 The last line of defense: integrated facial nerve monitoring for functional control of robotic assisted drilling in the mastoid

B. Bell, T. Williamson, J. Anso, M. Caversaccio, S. Weber, Univ. of Bern (CH)

10:30 Marker-less articulated surgical tool detection

A. Reiter, P.K. Allen, Columbia Univ., New York, T. Zhao, Intuitive Surgical, Inc., Sunnyvale, CA (USA)

10:45 Advanced imaging techniques for guiding pancreatic robotic surgery

Invited Speaker: C. Cappelli, Univ. of Pisa (I)

11:00 Break

11:15 Intraoperative Imaging – IO

Session Chair: Kevin Cleary, PhD (USA)

11:15 New challenges in vascular surgery

Invited Speaker: M. Ferrari, Univ. of Pisa (I)

11:30 Fluorescence goggle system for image-guided surgery

Y. Liu, W. Akers, A. Bauer, G. Sudlow, K. Liang, T. Charanya, J. Culver, S. Achilefu, Washington Univ., St. Louis, MO (USA)

11:45 Towards interventional MRI: semi-active device localization in phantom experiments and in a Thiel embalmed human cadaver model

M.A. Rube, E. Immel, B. Cox, A. Melzer, Univ. of Dundee (UK)

12:00 MR Image overlay guidance system (MR-IOS): system evaluation for clinical use

P. U-Thainual, J. Fritz, J.A. Carrino, I. Iordachita, The Johns Hopkins Univ., A.J. Flammang, Siemens Corporate Research, Baltimore, MD (USA), G. Fichtinger, T. Ungi, Queen's Univ., Kingston, Ontario (CDN), C. Moonjaita, Mahidol Univ., Nakorn Pathom (T)

12:15 A 3D novel ultrasound scanning system for image guided abdominal interventions

H.R. Sadeghi Neshat, A. Even, D. Cool, K. Barker, L. Gardi, N. Kakani, A. Fenster, Univ. of Western Ontario, London, Ontario (CDN)

12:30 Electromagnetic tracking for US-guided interventions: standardized assessment of a new compact field generator

A.M. Franz, K. Maerz, S. Delorme, H.-P. Schlemmer, H.-P. Meinzer, L. Maier-Hein, German Cancer Research Center (DKFZ), Heidelberg, R. Bendl, Heilbronn Univ. (D), J. Hummel, W.W. Birkfellner, Univ. of Vienna (A)

12:45 Towards intraoperative imaging of cardiac tissues using fiber-optics confocal microscopy: establishing imaging parameters from 3D reconstructions of micro-structure of myocardium

F.B. Sachse, C. Huang, A. Kaza, R. Hitchcock, Univ. of Utah, Salt Lake City, UT (USA)

13:00 Ecoguided hydro dissection of prerectal space: a new technique in male to female transgender surgery

G. Morelli, Univ. Hosp. Pisa (I)

13:15 Break

Pacinotti

08:45 Image Processing and Display – IPD

Session Chairs: Hans-Peter Meinzer, PhD (D); Wieslaw L. Nowinski, PhD (SGP)

8:45 3D virtual and physical pancreas reconstruction discriminating between health and tumor tissue with fuzzy logic

S. Marconi, F. Auricchio, A. Pietrabissa, Univ. of Pavia (I)

9:00 Accelerating joint histogram computation for image registration on the GPU

K. Ikeda, F. Ino, K. Hagihara, Osaka Univ. (J)

9:15 2D/3D registration for fast knee motion with bi-gradient optimization algorithm

T. Ohnishi, M. Suzuki, T. Kobayashi, H. Haneishi, Chiba Univ., S. Naomoto, A. Nawata, Alcare Co., Ltd., Tokyo (J)

9:30 Phase image processing for Dixon fat/water separation in low field MRI

G. Giunta, Univ. of Roma Tre, D. Caramella, Univ. of Pisa, L. Balbi, D. Greco, Esaote SpA., Genoa (I)

9:45 Break

Session Chairs: Hans-Peter Meinzer, PhD (D); Seong K. Mun, PhD (USA)

10:00 Challenges in imaging informatics

Invited Speaker: H.P. Meinzer, German Cancer Research Center, Heidelberg (D)

10:15 Manifold force to enhance active contour penetration into concavities

J.H. Bidgoli, R. A. Zoroofi, Univ. of Tehran, S. Alimohamadi, Research Center for Science and Technology in Medicine, Tehran (IR)

10:30 Fast reconstructed radiographs from Octree compressed CT

M.H. Fisher, Univ. of East Anglia, Norwich (UK)

10:45 TubeTK: an open-source toolkit of algorithms operating on images of tubes

D. Pace, A. Enquobahrie, P. Reynolds, S. Aylwar, Kitware Inc, Carrboro, NC, E. Bullitt, The Univ. of North Carolina, Chapel Hill, NC (USA), J. Jomier, Kitware SAS, Villeurbanne (F)

11:00 Small bowel segmentation on high-resolution CT scans using the mesenteric vasculature as a roadmap

W. Zhang, R.M. Summers, J. Liu, T. Nguyen, J. Yao, National Inst. of Health, A. Louie, S. Wank, National Inst. of Diabetes and Digestive and Kidney Diseases, Bethesda, MD (USA)

11:15 Semi-automatic intracranial tumor segmentation and tumor tissue classification based on multiple MR protocols

A. Franz, S. Remmele, C. Stehning, J. Keupp, J. Gieseke, Philips Research, Hamburg, S. Greschus, H. Tschampa, A. Müller, H.H. Schild, P. Mürzt, Univ. Hosp. Bonn (D)

11:30 Multi-compartment heart segmentation in ct angiography using a spatially varying Gaussian classifier

S. Murphy, Toshiba Medical Visualization Systems, Edinburgh (UK)

11:45 A method for highlighting tumor borders in lung CT images

V. Kovalev, E. Snezhko, S. Kharuzhik, Belarus National Academy of Sciences, Minsk (BY)

12:00 Automatic generation of anatomic characteristics from aneurysm surface models

M. Neugebauer, K. Lawonn, B. Preim, Univ. of Magdeburg (D)

12:15 Physical evaluation of color and monochrome EIZO Medical displays at the same luminance setting

H. Roehrig, X. Gu, J. Fan, Univ. of Arizona, Tucson, AZ (USA)

12:30 3D Trends in health care informatics

Keynote Speaker: Seong K. Mun, PhD, Arlington Innovation Center: Health Research (USA)

13:00 End of Session

CARS – Workshops and Special Events

Fermi

9:00–12:00 DICOM Working Group 22 „DICOM in Dentistry“ Meeting



14:00–16:00 DICOM Working Group 24 „DICOM in Surgery“ Meeting



Saturday, June 30, 2012

09:00–16:30



CARS
Workshops and Special Events

Galilei

**09:00–16:30 National Alliance for Medical Image Computing (NA-MIC)
Hands-on-Workshop on Image-Guided Therapy**

Objective

Over the past seven years, the National Alliance for Medical Image Computing (NA-MIC), one of the seven National Centers for Biomedical Computing (NCBC), part of the NIH Roadmap for medical research, has focused its efforts on the transfer of the latest advances in biomedical image analysis to the clinical and scientific community, through the development and dissemination of open source tools. As part of the NA-MIC toolkit, the 3D Slicer open-source software has been developed as a technology delivery platform that is both easy to use for clinical researchers, and easy to extend for software developers. To foster the translation of NA-MIC technology to clinical research applications, the NA-MIC Training Core has developed a series of courses and tutorials on medical image analysis topics using NA-MIC open-source tools. The goal of this workshop is to provide the members of the CARS community with a practical experience of the image processing and 3D visualization capabilities of NA-MIC tools for image-guided therapy research. The workshop is intended for clinicians and engineers, and will combine a series of lectures and hands-on sessions on image-guided prostate interventions, OpenIGTLink and white matter exploration for neurosurgical planning.

Training Faculty:

Sonia Pujol, Ph.D., Brigham and Women's Hospital, Boston, USA ,
Gabor Fichtinger, Ph.D., Queen's University, Kingston, Ontario, Canada
Noby Hata, Ph.D., Brigham and Women's Hospital, Boston, USA
Junichi Tokuda, Ph.D., Brigham and Women's Hospital, Boston, USA

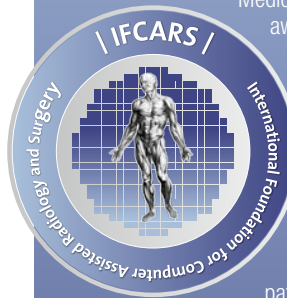
Agenda

9:00-9:10 Introduction
9:10-9:30 Presentation of the NA-MIC (Sonia Pujol)
9:30-10:45 Hands-on session 1: Data Loading and 3D Visualization (Sonia Pujol)
10:45-11:00 Coffee-Break
11:00-12:00 Hands-on session 2: Diffusion Tensor Imaging (Sonia Pujol)
12:00-13:30 Lunch Break
13:30-14:00 Image-Guided Therapy Applications for Percutaneous Interventions (Gabor Fichtinger)
14:00-14:30 Device integration for Image-Guided Therapy (Noby Hata)
14:30-14:45 Coffee-Break
14:45-15:30 Hands-on session 3: Neurosurgical Planning (Sonia Pujol)
15:30-16:00 Hands-on Session 4: OpenIGTLink (Junichi Tokuda)
16:00-16:10 Slicer resources and community (Sonia Pujol)
16:10-16:30 Concluding remarks and discussion

Preparation for the Workshop

The workshop combines oral presentations and instructor-led hands-on sessions with the participants working on their own laptop computers. A technical training staff will be providing one-to-one assistance as needed. All participants are required to come with their own computer and install the Slicer4 software and data. Windows XP, Linux or MacOS Lion are supported. A minimum of 1 GB of RAM (2 GB if possible) and a dedicated graphic accelerator with 64mb of on board graphic memory are required. The software and datasets will be posted a few weeks before the event.

International Foundation for Computer Assisted Radiology and Surgery – IFCARS
www.ifcars.org



Medicine is undergoing a historic transition, moving away from a trial-and-error model of care, towards individualized treatment strategies based on patient-specific knowledge management of disease and treatment. Not only the biomedical systems sciences, mathematics, medical imaging and medical informatics but also the discipline of computer assisted radiology and surgery are enablers of this new paradigm. They provide the methods and tools for knowledge management and specifically for a patient-specific medicine.

Important aspects of these dramatically evolving methodologies and tools are:

1. Modelling of human organ systems, pathologies and clinical processes from scientific based evidence, medical guidelines and data mining.
2. Analysis and adaption of models from data and information gathered from specific patients to generate knowledge models of patient-specific situations and appropriate treatment processes.
3. Improved accuracy of diagnosis and optimal therapy through simulation as well as knowledge and decision management.
4. Higher quality of therapy by means of real time integration of information in patient-specific models and therapeutic processes.
5. Validation processes of clinical decisions on patient-specific and population levels as well as appropriate representations in repositories.

Patients, physicians and the health care systems are the beneficiaries of this development through improved quality of health care at a socially acceptable cost. IFCARS with its associated CARS congress and journals are key actors in this transitional process.

The Foundation aims at supporting all measures promoting this development, in particular, the creation and communication of information in the field of computer assisted medicine and the study of its medical, social and ethical effects on our society.

The purpose of the Foundation is particularly realised by

- Events of all kinds, e.g. congresses, seminars, think tank focus discussions, training and further education as well as the preparation of appropriate publications.
- Support of interdisciplinary and international activities relating to the research and development of innovative public health concepts, particularly through system development and subsequent implementation and evaluation.
- Promotion of national and international cooperation in science and medicine, particularly in research, development and educational activities.

Key parts of the CARS congress which address advanced methods and tools for a patient specific medicine have been initiated by IFCARS. Their inclusion in the International Journal of CARS is also promoted by IFCARS. In order to ascertain a scientific-based foundation for a modern medicine and specifically for computer assisted radiology and surgery, IFCARS is actively pursuing research and developing projects with other institutions with similar aims.

In order to accelerate the transfer of research results of CARS into clinical practice, IFCARS is also taking a leading role as an enabler of ICT supported clinical trials and studies.

Finally, to increase awareness and the application of these new possibilities of a computer assisted medicine in a socially responsible way, IFCARS will establish a membership and award system to promote this historic transition of medicine.

Saturday, June 30, 2012

14:00–18:00



16th Annual Conference of the International Society for Computer Aided Surgery

President: Kevin Cleary, PhD (USA)

EuroPACS Social Event ISCAS Social event

Auditorium

14:00 Surgical Modelling, Simulation and Education – SMSE

Session Chairs: Terry M. Peters, PhD (CDN); Masakatsu Fujie, PhD (J)

14:00 Toward surgical skill assessment based on fractal patterns in minimally-invasive surgeries

N. Ahmadi, G.D. Hager, Johns Hopkins Univ.,
M. Ishii, Johns Hopkins Medical Inst., Baltimore, MD (USA)

14:15 Virtual mastoidectomy performance evaluation through multi-volume analysis

T. Kerwin, D. Stredney, Ohio Supercomputer Center, G. Wiet, The Ohio State Univ.
Medical Center, H.-W. Shen, Ohio State Univ., Columbus, OH (USA)

14:30 Assessment of virtual fixtures for the development of basic skills in robotic surgery

L. Gasperotti, D. Zerbato, M. Scandola, P. Fiorini, Univ. of Verona, A. Hernansanz,
A. Casals, Inst. for Bioengineering of Catalonia, Barcelona (I)

14:45 Development of intelligent laparoscopic training system: design of parallel manipulator to mimic motion of organ in abdominal cavity

H. Ishii, A. Takanishi, Waseda Univ., Tokyo, M. Uemura, M. Tomikawa,
M. Hashizume, Kyushu Univ., Fukuoka (J)

15:00 Evaluation of numerical simulation error of brain shift based on finite element analysis

R. Imai, K. Adachi, Kobe Univ., H. Iseki, Y. Muragaki,
T. Suzuki, Tokyo Women's Medical Univ. (J)

15:15 Simulation of surgical cutting through cohesive zone methods

K. Lister, J.P. Desai, Univ. of Maryland, College Park, MD, A. Lau, Drexel Univ.,
Philadelphia, PA (USA)

15:30 Real-time simulation for buried suture

L. Gu, S. Yang, W. Lu, Shanghai Jiaotong Univ. (CHN)

15:45 Virtual pneumoperitoneum based on mass-spring-damper models for pre-operative laparoscopic surgical planning

Y. Nimura, J. Qu, M. Oda, K. Mori, Nagoya Univ., T. Kitasaka, Aichi Inst. of Technology,
Toyota, K. Misawa, Aichi Cancer Center Hosp., Nagoya (J)

16:00 Break

16:15 Surgical Modelling, Simulation and Education – SMSE

Session Chairs: Terry M. Peters, PhD (CDN); Masakatsu Fujie, PhD (J)

16:15 The use of prefabricated templates in cranial vault remodeling

J. Phillips, J. Burge, N. Saber, D. Khechoyan, J. Drake, The Hosp. for Sick Children,
Toronto, Ontario (CDN)

16:30 Expression of cystohepatic duct anomaly using modular structured organ model in a laparoscopic surgery simulator

K. Tagawa, H. Tanaka, Ritsumeikan Univ., Shiga, K. Yoshimasa, M. Komori,
S. Morikawa, Shiga Univ. (J)

16:45 Simulation and evaluation using 3D CT and MRI knee models for drilling femoral bone tunnels in anterior cruciate ligament reconstruction

Y. Tashiro, M. Uemura, K. Toyoda, M. Hashizume, Kyushu Univ. Hosp., K. Okazaki,
Y. Iwamoto, Kyushu Univ., Fukuoka (J)

17:00 Creation of prosthesis using non contact metrology

G. Schwaderer, Geomagic GmbH, Stuttgart (D)

17:15 Automatic classification of hallux valgus deformations with the use of automatic evaluation of geometric descriptors of foot skeleton

B. Borucki, K. Nowinski, Univ. of Warsaw, P. Adamczyk, J. Laskowski, Carolina Medical
Center, Warsaw (PL)

17:30 Modeling lung's internal pressure dependence of electrical conductivity for lung RFA

N. Yamazaki, H. Watanabe, Y. Kobayashi, T. Miyashita, M. Fujie, Waseda Univ., Tokyo (J)

17:45 Virtual training for US guided needle insertion

D. Zerbato, L. Vezaro, L. Gasperotti, P. Fiorini, Univ. of Verona (I)

18:00 End of Session



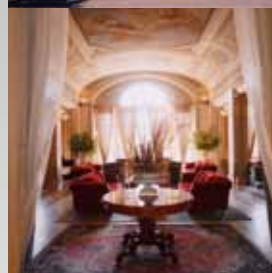
EuroPACS Social Event Thursday, June 28, 2012

Once loved by the Etruscans and the ancient Romans, it became famous for the nobility all over Europe in 1743, when the Grand Duke of Tuscany, Francesco Stefano of Lorena, made it his own summer spa residence, as well as a fashionable meeting place which had among its other important guests well-known people such as Gustav of Sweden, George IV of England, Vittorio Alfieri and Mary Shelley.

Shelley Hall – right in front of the terrace; the place for the welcome cocktail

Ristorante dei Lorena Location for the buffet dinner of the EuroPACS Social Event

To ensure a ticket for this event, please register early as only limited spaces are available.



ISCAS Social Event Friday, June 29, 2012

Santa Croce in Fossabanda is an ideal place for meetings, ceremonies and events. The wide hall, with the original frescoes of the convent dating back to the XIV century, will host the buffet dinner for the ISCAS Social Event.

To ensure a ticket for this event, please register early as only limited spaces are available.



The International Society for Computer Aided Surgery is a non-profit organization aiming to help global collaborations and facilitate communications among our colleagues in the fields of computer-aided surgery and related medical interventions.

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- >> Reduced subscription to the International Journal of Computer Assisted Radiology and Surgery
- >> Priority reservations and discounts on ISCAS events

ISCAS activities:

- >> ISCAS/CARS annual conference
- >> Student awards and scholarships
- >> Workshops
- >> Affiliation with scientific journals

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Honorary Members

Pierre Rabischong, Montpellier (France), Thomas Lambrecht, Basle (Switzerland), Kintomo Takakura, Tokyo (Japan), Toyomi Fujino, Tokyo (Japan), Michael Vannier, Chicago (USA), Takeyoshi Dohi, Tokyo (Japan)

EuroPACS

Linking research to clinical practice

Founded in 1982 EuroPACS has established itself as a scientific reference circle of reputable experts in the field of imaging informatics and PACS. It has gained its credentials in promoting research, user experience, implementation, assessment of benefits of development and use of digital systems for the acquisition, storage, display, communication, and processing of medical pictures and related information as well as their integration in eHealth initiatives



EuroPACS Academy hands-on workshops 2012

3rd EuroPACS Academy

WORKSHOP: CLINICAL APPLICATIONS OF COMPUTER AIDED DIAGNOSIS - July, 2-3, 2012 - PISA, IT

4th EuroPACS Academy

WORKSHOP: CLINICAL APPLICATIONS OF COMPUTER AIDED DIAGNOSIS - October, 5-6, 2012 - PRAGUE, CZ

Registration: www.europacs.org



*EuroPACS
people*



Poster Session

CAR

001 The impact of CT artifacts from metallic hip prostheses on the calculated dose in photon radiotherapy for prostate cancer

L. Matulewicz, K. Slosarek, Maria Sklodowska-Curie Memorial Cancer Center, Gliwice (PL)

002 Computer simulation for laser-driven mini-accelerators to be employed in radiobiology and radiotherapy

A. Giulietti, L. Fulgentini, L. Labate, L.A. Gizzi, National Research Council – CNR, Pisa, F. Di Martino, C. Traino, Univ. Hosp. Pisa (I)

003 Safety management for the development of a software used in radiotherapy

~~T. Boogaerts, B. Macq, J. Lee, Catholic Univ. of Louvain, M. Oezer, IBA – Ion Beam Applications SA, Louvain-la-Neuve (B)~~

004 Image lag simulation system for radiotherapy planning of a real-time target tracking

R. Tanaka, K. Ichikawa, K. Matsubara, S. Sanada, Kanazawa Univ., H. Kawashima, Y. Iida, Kanazawa Univ. Hosp. (J)

005 Dose distribution analysis of the field-in-field technique for tangential breast irradiation

Y. Kamoto, K. Takahara, A. Tanaka, T. Hirayama, T. Yamaguchi, H. Kato, H. Mizuno, E. Ando, Osaka Police Hosp. (J)

006 How to consider dose to small volumes for repeat spinal stereotactic body radiotherapy treatments?

L. Ma, D. Larson, Univ. of California San Francisco, CA (USA), A. Sahgal, Princess Margaret Hosp., Toronto, Ontario (CDN)

007 Integration of DICOM-RT into instrument guidance system for intra-operative interstitial HDR-brachytherapy

G. Toporek, D. Wallach, M. Peterhans, S. Weber, Univ. of Bern, J. Vock, D. Terribilini, M.K. Fix, P. Manser, D.M. Aebersold, Inselspital Bern (CH)

008 Automatic segmentation of the heart LV from cardiac MR images using a 3D nonlinear statistical shape model

S.F. Roohi, R.A. Zoroofi, Univ. of Tehran (IR)

009 Automation of CT-based measurement of 3-dimensional cardi thoracic volumetric ratio

K. Abe, H. Takeo, Y. Donomae, Kanagawa Inst. of Technology, Atsugi, Y. Kuroki, Tochigi Cancer Center, Utsunomiya, Y. Nagai, National Cancer Center, Tokyo (J)

010 Left ventricular myocardium segmentation on delayed phase of multi-detector row computed tomography

I.-C. Tsai, Show Chwan Memorial Hosp., Changhua, Y.-L. Huang, P.-T. Liu, Tunghai Univ., Taichung, M.-C. Chen, Taichung Veterans General Hosp. (RC)

011 Automatic generation of models for abdominal aortic aneurysms and intraluminal thrombus based on hexahedral meshes

J. Tarjuelo-Gutierrez, B. Rodríguez-Vila, P. Sánchez-González, E.J. Gómez, Technical Univ. of Madrid (E), D.M. Pierce, G.A. Holzapfel, Univ. of Technology, Graz (A)

012 Intraprocedural vitality diagnosis for coronary interventions using spatially correlated X-ray and 2D-strain US

S. Bisplinghoff, C. Hänisch, K. Radermacher, M. de la Fuente, RWTH Aachen Univ., M. Becker, Univ. Hosp. Aachen (D)

013 Removing artifacts in coronary angiograms

M. Taghizadeh, S. Sadri, A. Doosthoseini, Isfahan Univ. of Technology (IR)

014 Comparison between Horn-Schunck and Lucas-Kanade methods for myocardium segmentation in short axis cardiac CineMR images

E.N. Marzban, A.S. Fahmy, Cairo Univ. (ET)

015 An innovative software agent to support efficient planning and optimization of diagnostic activities in radiology departments

M. Ciccolella, R. Gatta, N. Mazzini, A. Bonisoli, C. Cazzaglio, M. Castellano, A. Gerevini, R. Maroldi, Univ. of Brescia (I)

016 Application of a novel modulation transfer function for evaluation of CT image denoising algorithms

M. Ramze Rezaee, McKesson Provider Technologies, Richmond, British Columbia, Y. Tesfazghi Weldeselasie, M.S. Atkins, Simon Fraser Univ., Burnaby, British Columbia (CDN)

017 Interlobar fissure extraction from a chest CT volume based on a new loss function for a boosting algorithm

A. Shimizu, M. Kobayashi, K. Nakagomi, H. Kobatake, Tokyo Univ. of Agriculture and Technology, M. Yakami, K. Fujimoto, K. Togashi, Kyoto Univ. (J)

018 Accurate two dimensional cardiac strain calculation using adaptive windowed Fourier Transform based on Gabor wavelet transform

C.K. Chui, Y. Fu, C.L. Teo, National Univ. of Singapore (SGP)

019 Segmentation of video capsule endoscopic images using alpha-divergence based active contour method

L. Meziou, A. Histace, O. Romain, B. Granado, Univ. of Cergy-Pontoise, X. Dray, Hosp. Lariboisière, Paris (F)

020 A novel method of automatic and rapid detection and segmentation merged left and right lungs

W. Tan, J. Yang, D. Zhao, Northeastern Univ., Shenyang (CHN)

021 Improvement of a simultaneous statistical shape model for multiple abdominal organs using synthesized-based learning

A. Shimizu, M. Nakada, A. Saito, H. Watanabe, H. Kobatake, Tokyo Univ. of Agriculture and Technology, S. Nawano, International Univ. of Health and Welfare, Tokyo (J)

022 Parameterization and 3D segmentation of bone tumours in magnetic resonance images

J. Czajkowska, P. Badura, E. Pietka, Silesian Univ. of Technology, Gliwice (PL)

023 Three-dimensional modelling procedure of the carotid artery and its surrounding bones by CT angiography images for assessment of the artery deformation

T. Ohya, T. Iwai, R. Fujimaki, I. Tohnai, Yokohama City Univ., T. Kato, K. Luan, H. Liao, E. Kobayashi, I. Sakuma, The Univ. of Tokyo, R. Kohno, Yokohama National Univ. (J)

024 An improved multiple anatomical landmark detection method with combinatorial optimization and MadaBoost-based candidate likelihood determination

S. Hanaoka, Y. Masutani, M. Nemoto, Y. Nomura, S. Miki, N. Hayashi, K. Ohtomo, The Univ. of Tokyo Hosp. (J)

025 3D fused visualization applied to medical data using particle-based rendering

K. Hasegawa, S. Ojima, S. Nakata, S. Tanaka, Ritsumeikan Univ., Shiga (J)

026 Fibroglandular tissue segmentation using a Gaussian mixture model and a novel kernel merging technique

M. Salmeri, P. Casti, A. Mencattini, Univ. of Rome Tor Vergata, M.L. Pepe, San Paolo Hosp., Bari (I)

027 Coregistration of dynamic contrast enhanced magnetic resonance images

H. Rusinek, A. Mikheev, L. Morowitz, R. Zeligman, Y. Zaim Wadghiri, V.S. Lee, New York Univ. School of Medicine (USA)

028 Automatic left ventricle segmentation in volumetric SPECT data set by variational level set

M. Hoshtalab, F. Babapour-Mofrad, N. Monshizadeh, Islamic Azad Univ., M. Amoui, Shahid Beheshti Univ., Tehran (IR)

029 MR image assisted drug delivery in nasal and trachea tissues based on an enhanced level set method

M. Daneshmand, R. Aghaeizadeh Zoroofi, Univ. of Tehran (IR), H. Watabe, Osaka Univ. (J)

030 Statistical thickness map construction of the hip joint cartilages in MR and CT images

P. Roshani, R. Aghaeizadeh Zoroofi, Univ. of Tehran (IR), T. Nishii, N. Tomiyama, Y. Sato, Osaka Univ. (J)

031 A novel non-uniform patch base low-dose CT image denoising scheme via dictionary learning

K. Abhari, J. Alirezaie, Ryerson Univ., Toronto, Ontario, P. Babyn, Univ. of Saskatchewan, Saskatoon, Saskatchewan (CDN)

032 Practical region growing segmentation for breast tumor in 3D sonography

Y.-L. Huang, S.-C. Chang Tunghai Univ., Taichung, D.-R. Chen, Changhua Christian Hosp. (RC)

033 Feasibility of image fusion system in liver tumor ablation therapies

V. Battaglia, S. Mazzeo, C. Cappelli, C. Bartolozzi, Univ. of Pisa (I)

034 Optimal treatment planning for radio-frequency ablation of hepatic tumors

H. Abeledo, E. Campos-Nanez, George Washington Univ., F. Banovac, Georgetown Univ. Hosp., K. Cleary, Children's National Medical Center, Washington, DC (USA)

035 Linear optimization modeling to maximize revenue generation in an academic interventional radiology division

R. Baum, Brigham and Women's Hosp., Boston, MA, D. Bertsimas, N. Kallus, MIT – Massachusetts Inst. of Technology, Cambridge, MA (USA)

036 Stereotactic biopsies with the ActiSight needle guidance system

D.L. Lauretti, B. Ginanni, G. Gherarducci, E. Bozzi, C. Cappelli, R. Cioni, C. Bartolozzi, Univ. of Pisa (I)

037 Toolkit for Wearable Electrical Impedance Tomography (TWEIT): a software library for real-time image reconstruction on mobile devices

G. Baldi, D. Mazzei, V. Gervasi, F. Forfori, Univ. of Pisa (I)

038 Visualization of muscle fiber with iodine stain in Micro-Computed Tomography (Micro-CT)

W. Park, Yonsei Univ., Seoul (ROK)

039 CT colonography electronic cleansing: image quality analysis

A. Mantarro, E. Neri, E. Picano, P. Vagli, P. Bemì, R. Scandifio, L. Faggioni, C. Bartolozzi, Univ. of Pisa (I)

040 Comparison of chest digital tomosynthesis and computed tomography for the detection of artificial pulmonary nodules during screening: a phantom study

T. Gomi, T. Umeda, T. Takeda, K. Sakaguchi, Kitasato Univ., Sagami-hara, T. Okawa, Nagoya Univ., M. Nakajima, Dokkyo Medical Univ., Tochigi (J)

041 A reproducible non-invasive method for the evaluation of glenoid bone loss by multiplanar reconstruction curved CT imaging using a cadaveric model

G. Concarì, M. De Filippo, M. Silva, C. Rossi, F. Ceccarelli, F. Calderazzi, Univ. Hosp. of Parma, D. Petriccioli, City Hosp. of Brescia, A. Castagna, IRCCS Inst. for Cancer Research and Treatment, Milan (I)

042 Assessment of animation imaging under respiratory dynamics using ADCT for the evaluation of chest wall or great vessel invasion of lung cancer: initial feasibility experience

M. Endo, T. Aramaki, M. Moriguchi, K. Asakura, Shizuoka Cancer Center (J)

043 Functional xeroradiography for assessment of Achilles tendinopathy recovery with a dynamic flat-panel detector

R. Tanaka, S. Sanada, Kanazawa Univ., H. Kawashima, K. Sakuta, Y. Iida, Kanazawa Univ. Hosp. (J)

044 Comparison of conventional mammography and PCM in soft copy diagnosis

G. Ihori, Y. Koderu, N. Fujita, Nagoya Univ., A. Sugiura, N. Yasuda, Gifu Univ. (J)

045 3D radiographic study of postural variations due to stand to sit task

R. Ilhmi, Centre Hosp. de Villefranche, E. Berthonnaud, Univ. de Lyon, Saint Etienne, J. Dimnet, Group of Applied Research in Orthopaedic, Lyon (F)

046 Reduction of patient dose in digital mammography: simulation of low dose image

Y. Saito, M. Yamada, Y. Koderu, Nagoya Univ., N. Fujita, Nagoya Univ. Hosp., A. Kawai, Toyota Regional Medical Center (J)

047 Development of automated image correction method for digital radiographs

I. Kawashita, Y. Okura, T. Ishida, Hiroshima International Univ. (J)

048 Value of 3D MRI reconstructions for the anatomical localization of deep pelvic endometriosis

S. Giusti, F. Forasassi, L. Bastiani, V. Cela, E. Fruzzetti, S. Angeli, V. Ferrari, D. Caramella, C. Bartolozzi, Univ. of Pisa (I)

049 Software for quality assurance of MRI devices in clinical operating process

M. Zelkman, S. Kruchinin, K. Snopova, Research and Practical Centre of Medical Radiology, Moscow (RUS)

050 A fiber crossing diffusion phantom for the evaluation of different fiber tracking algorithms in pre-surgical planning

M. Tosetti, D. Sclero, L. Biagi, IRCCS Stella Maris Scientific Inst., Pisa, L. Billeci, Univ. of Pisa (I)

051 DART – Diffusion Artifact Removal Tool

M. Tosetti, D. Sclero, L. Biagi, M. Costagli, IRCCS Stella Maris Scientific Inst., Pisa (I)

052 Decoding perceived spatial position from BOLD activity in early visual cortex

M. Tosetti, Stella Maris Scientific Inst., Pisa, P. Binda, M.C. Morrone, Univ. of Pisa (I), G.M. Boynton, S.O. Murray, Univ. of Washington, Seattle, WA (USA)

Poster Session

053 Contrast-enhanced MR perfusion imaging of pancreatic lesions: usefulness of time-signal intensity curves
G. Gherarducci, P. Boraschi, F. Donati, R. Gigoni, A. Mantarro, F. Pacciardi, U. Boggi, D. Caramella, F. Falaschi, C. Bartolozzi, Pisa Univ. Hosp. (I)

054 3D cube sequence in preoperative loco-regional staging of rectal cancer
L. Faggioni, R. Scandifio, A. Mantarro, P. Vagli, P. Bemì, M. Barattini, E. Neri, C. Bartolozzi, R. Balestri, P. Bucciatti, Univ. of Pisa (I)

055 Position control of echogram plane by probe scan mechanism using pneumatic actuators
T. Yoshida, S. Onogi, S. Saito, K. Masuda, Tokyo Univ. (J)

056 Creation of composite images of localized MIP and virtual colonoscopic images in CTC: a new concept of virtual colonoscopic fluorography for visualization and CAD
T. Ogura, Y. Hashiba, E. Sakumoto, H. Nagashima, K. Doi, Gunma Prefectural College of Health Sciences, Maebashi (J)

057 Optimal angle to perceive stereoscopic radiography
T. Morikawa, Y. Kadera, Nagoya Univ. (J)

058 A volume visualizer on mobile devices for radio-therapy simulations
A. Kimura, Ashikaga Inst. of Technology, S. Tanaka, K. Hasegawa, Ritsumeikan Univ., Shiga, T. Sasaki, High Energy Accelerator Research Organization, Tuskuba (J)

059 An improved method of blood vessel segmentation in retinal images
M.H. Fisher, L. Zhang, Univ. of East Anglia, Norwich (UK)

060 Teleus: interactive, energy-efficient US-based tele-diagnosis services
A. Urbanik, Jagiellonian Univ., Krakow, L. Janowski, AGH Univ. of Science and Technology (PL), K. Wac, Univ. of Geneva, A. Geissbühler, Univ. Hosp. Geneva (CH)

061 SimPatiQ – optimisation of modality based diagnostics processes
V. Reijonen, Helsinki Univ. Central Hosp., S. Savolainen, Univ. of Helsinki (FIN)

062 A comprehensive study of noise modeling in X-ray fluoroscopy
M. Cesarelli, P. Bifulco, T. Cerciello, M. Romano, L. Paura, Univ. of Naples Federico II (I)

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063 Accurate automatic detection of the subthalamic nucleus subdomains
R.R. Shamir, A. Zaidel, L. Joskowicz, H. Bergman, The Hebrew Univ. of Jerusalem, R. Eitan, Z. Israel, Hadassah Univ. Hosp., Jerusalem (IL)

064 Auto-adjusting arm holding robot: EXPERT for microscopic neurosurgery – clinical results and some modifications
T. Goto, K. Hongo, Y. Hara, Shinshu Univ. School of Medicine, Matsumoto, J. Okamoto, H. Iseki, Tokyo Women's Medical Univ. (J)

065 Visual and tactile sensation evaluation of a neuro-surgical training system developed by using low-cost haptic device
K. Adachi, K. Shoji, R. Imai, T. Kurimoto, A. Fujita, E. Kohmura, Kobe Univ. (J)

066 Visualization of SW brain atlases in neurosurgery navigation system
L. Gu, X. Li, J. Xu, Shanghai Jiaotong Univ. (CHN)

067 Development of ocular movement sensor for intra-operative monitoring
Y. Hara, T. Goto, K. Hongo, Shinshu Univ. School of Medicine, Matsumoto, J. Okamoto, Tokyo Women's Medical Univ. (J)

068 3 Tesla versus 1,5 Tesla magnetic resonance imaging: impact on surgical time and short-term outcome of subthalamic nucleus deep brain stimulation in Parkinson disease
C. Martini, C. Martini, I. Pesaresi, E. Del Prete, R. Ceravolo, M. Cosottini, L. Lutzemberger, U. Bonuccelli, Univ. Hosp. Pisa (I)

069 Development of a new robotic tensor for TKR soft-tissue balance measurement
J. Okamoto, Y. Muragaki, H. Iseki, Tokyo Women's Medical Univ., T. Matsumoto, K. Seiji, M. Kurosaka, Kobe Univ. H. Muratsu, Nippon Steel Hirohata Hosp., Himeji (J)

070 Navigation-assisted Gamma nail implantation – the first feasibility study
A. Wilharm, F. Gras, I. Marintschev, G. Hofmann, Univ. Hosp. Jena (D)

071 Pre- and intraoperative MultiPlanar Reconstruction (MPR) with mobile 3D fluoroscopy. Is it helpful for surgery of proximal humerus fractures?
P. Hepp, J. Theopold, J.-S. Javiers, C. Josten, Univ. Hosp. Leipzig (D)

072 Augmented reality aided patient-specific reconstruction plate design and contouring for pelvic and acetabular fracture surgery
F. Shen, Y. Qi, Beihang Univ., Beijing., Q. Guo, Y. Shen, Third Military Medical Univ., Chongqing (CHN), B. Chen, INSERM, Nancy (F)

073 Analyzing shoulder translation with navigation technology
R.E. Ellis, S. Zakani, G. Venne, E.J. Smith, R. Bicknell, Queens Univ., Kingston, Ontario (CDN)

074 X-ray based identification of implanted knee prostheses
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075 Do low-dose Multi slice Spiral Computed Tomography (MSCT) protocols influence the accuracy of computer-assisted surgery?
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076 A new validation method for simulation-guided navigation in surgery of facial deformities
G. Badiali, A. Bianchi, C. Marchetti, Univ. of Bologna, E. Schileo, A. Roncari, Rizzoli Orthopedic Inst., Bologna (I)

077 Empirical investigation on angled CBCT capture-strategy for surgical splints generation in correcting-jaw operation
W. Liu, C. Weissinger, N. Adolphs, B. Hoffmeister, E. Keeve, Charité – Univ. Medicine Berlin (D)

078 Patient-specific finite-element simulation of aortic valve-sparing surgery
H. Hadjar, R. Friedl, H.-H. Sievers, P. Hunold, B. Stender, A. Schlaefer, Univ. of Lübeck (D)

079 Robotic platform for magnetic catheter steering based on US tracking
G. Ciuti, S. Tognarelli, P. Dario, A. Menciassi, Sant'Anna School of Advanced Studies, Pontedera (I)

080 MRI guided transapical Perceval S valve implantation
M. Li, D. Mazilu, K. Horvath, National Inst. of Health, Bethesda, MD (USA)

081 Tracking of heart surface motion for myocardial cell sheet implantation
D. Hagihara, I. Sato, R. Nakamura, Chiba Univ. (J)

082 Identification of cardiac tissue perfusion by endoscopic indocyanine green fluorescence image captured by electrocardiograph-synchronized multiple exposure
T. Ando, H. Kim, S. Joung, E. Kobayashi, H. Liao, H. Tsukihara, I. Sakuma, The Univ. of Tokyo, S. Kyo, M. Ono, The Univ. of Tokyo Hosp. (J)

083 Automatic landmark extraction for stent deformation analysis after transcatheter aortic valve implantation from CT images
M. Gessat, S.H. Sündermann, V. Falk, Univ. Hosp. Zurich, T. Pollok, Swiss Federal Inst. of Technology (ETH), Zurich (CH), A. Laubenheimer, Karlsruhe Univ. of Applied Sciences (D)

084 New methods for tracking error compensation in transbronchial interventions
N. Navab, T. Reichl, Technical Univ. Munich, M. Menzel, H. Hautmann, Klinikum rechts der Isar, Munich, I. Gergel, I. Wegner, H.-P. Meinzer, German Cancer Research Center (DKFZ), Heidelberg (D)

085 Locally operated detachable endo-effector manipulator for laparoscopic surgery
M. Shin, T. Kawai, J. Hashida, Osaka Inst. of Technology, Y. Nishizawa, T. Nakamura, Kyoto Univ. (J)

086 Newly developed stereo endoscope
S. Yamamoto, H. Mineta, Hamamatsu Univ., S. Nishizawa, Univ. of Occupational and Environmental Health, Fukuoka, K. Tomoda, Kansai Medical Univ. Hirakata Hosp. (J)

087 Development of bending mechanism for forceps with least-incision transformable end-effector mechanism for endoscopic surgery
T. Abe, H. Nakaji, R. Nakamura, Chiba Univ. (J)

088 Robotically assisted flexible endoscopy: retrofitting a ureteroscope for exploration of the kidney
K. Cleary, H. Luo, C. Peters, E. Wilson, A. Burns, K. Children's National Medical Center, Washington, DC (USA), K. LeRoy, J. Goldie, B. LaBrecque, Tianjin Univ. (CHN)

089 Intra-operative 3D reconstruction for image-guided navigation in active capsule endoscopy
G. Ciuti, A. Menciassi, P. Dario, Sant'Anna School of Advanced Studies, Pontedera (I), M. Visentini-Scarzanella, A. Dore, G.-Z. Yang, Imperial College London (UK)

090 Construction of the master manipulator with six active degrees of freedom for robotic system for single port endoscopic surgery
T. Noguchi, Y. Kobayashi, K. Kawamura, M. Fujie, Waseda Univ., Tokyo, K. Toyoda, M. Hashizume, Kyushu Univ., Fukuoka (J)

091 A probabilistic approach to fusion of time of flight and multiple view based 3d surface reconstruction for laparoscopic interventions
A. Groch, H.-P. Meinzer, L. Maier-Hein, T. Kilgus, H.-P. Schlemmer, German Cancer Research Center (DKFZ), Heidelberg, S. Haase, J. Hornegger, Friedrich-Alexander-Univ. Erlangen-Nuremberg, M. Wagner, H. Kenngott, Univ. of Heidelberg (D)

092 Utilizing computational fluid dynamics and virtual surgery for pre-operative assessment of nasal surgery
S.W. McClurg, F. Sheer, S. Ghadiali, S. Das, The Ohio State Univ. Medical Center, Columbus, OH (USA)

093 E-MIS validity applied to TELMA enhanced learning environment
J.F. Ortega Moran, J. Pagador, L.F. Sánchez Peralta, F.M. Sánchez Margallo, Jesús Usón Minimally Invasive Surgery Centre, Cáceres, E.J. Gómez Aguilera, Technical Univ. of Madrid, J. Noguera Aguilar, Hosp. Son Llatzer, Palma de Mallorca (E)

094 Real-time critical structure proximity alerts in intra-operative cone-beam CT for head and neck surgery
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095 Design of an integrated IT platform to support the oncologic ENT treatment process and concept of a surgical planning unit
S. Bohn, J. Meier, T. Neumuth, Innovation Center Computer Assisted Surgery (ICCAS), Leipzig, G. Wichmann, G. Strauss, A. Dietz, A. Boehm, Univ. Hosp. Leipzig (D)

096 Development and evaluation of a calibration method of an orbital X-ray imaging concept
F. Fehlhaber, M. Käseberg, C. Winne, Fraunhofer-Inst. for Production Systems and Design Technology, Berlin, E. Keeve, F. Stopp, Charité – Univ. Medicine Berlin (D)

097 Robotic area-imaging with ESR local coil for redox imaging
K. Toyoda, M. Murata, K. Ichikawa, F. Hyodo, M. Hashizume, Kyushu Univ., Fukuoka (J)

098 Fast textured surface reconstruction of organs using monocular endoscope during exploratory phase
S. Nicolau, M. Nader, L. Soler, IRCAD - Research Inst. Against Digestive Cancer, Strasbourg (F), K. Arabi, A. Mostafa, Menoufia Univ. (ET)

099 Fully automatic knee CT image segmentation with locally adaptive shape priors
C. Last, A. Sommerkorn, R. Westphal, F. Wahl, Technical Univ. Braunschweig, U. Wiebking, C. Krettek, Hannover Medica School (D)

100 Evaluating thin-plate spline registration of the breast in two supine positions
A.L. Martel, M. Ebrahimi, P. Siegler, D. Plewes, Sunnybrook Research Inst., Toronto, Ontario (CDN)

101 A practical and robust clinical method for an accurate intra-operative video augmented X-ray
P. Fallavollita, L. Wang, X. Chen, N. Navab, Technical Univ. Munich (D)

102 Patient-specific modeling and preoperative planning for kidney surgery
L. Joskowicz, R. Vivanti, The Hebrew Univ. of Jerusalem (IL)

103 Nephron-sparing robotic surgery: preliminary experience from a single center
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105 Development of laparoscopic surgery navigation system using three-dimensional ultrasonic image
S. Zenbutsu, T. Yamaguchi, Chiba Univ. (J)

106 Hybrid optical-electromagnetic tracking for compensation of organ movement in image-guided rectal cancer surgery
M. Wagner, H. Kenngott, J. Wünscher, M. Gondan, B. Müller, Univ. of Heidelberg, C. Zöllner, A. Groch, L. Maier-Hein, German Cancer Research Center (DKFZ), Heidelberg (D)

107 Stereoscopic augmented reality for pediatric laparoscopic surgeries
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108 Liver motion reconstruction
D. Spinczyk, Silesian Univ. of Technology, Gliwice (PL)

109 Surgical planning of living donor hepatectomy based on preoperative three-dimensional simulation
S. Satou, T. Aoki, J. Kaneko, Y. Sakamoto, K. Hasegawa, Y. Sugawara, N. Kokudo, Univ. of Tokyo (J)

110 Accuracy evaluation of an image overlay in an instrument guidance system for laparoscopic liver surgery
M. Fusaglia, D. Wallach, M. Peterhans, G. Beldi, S. Weber, Univ. of Bern (CH)

111 Usage of 3 dimensional preoperative planning and 3 dimensional individualized cutting device for maxillofacial osteotomy
Y. Takeichi, K. Yokoo, Aichi Medical Univ., Nagakute, H. Iguchi, N. Tanaka, G. Kuroyanagi, Nagoya City Univ., H. Motai, Motai Clinic, Tokai, M. Iwamoto, Y. Morishima, Ogaki Municipal Hosp. (J)

112 Forming the interface between doctor and designing engineer – an efficient software tool to define auxiliary geometries for the design of individualised lower jaw implants
P. Sembdner, C. Schoene, R. Stelzer, Technical Univ. Dresden (D)

113 An automatic algorithm for the elastic registration of prostate gland on T2-weighted and EPI-DWI magnetic resonance acquisitions
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114 Quantitative evaluation of the effectiveness of cosmetic treatments and aesthetic surgical interventions based on surface scans
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115 Correlation between structural and color changes in 3D facial images of head and neck cancer patients following reconstructive surgery
J. Lee, G. Muralidhar, A. Bovik, M. Fingeret, M. Markey, The Univ. of Texas at Austin (USA)

116 Video annotation system for laparoscopic oophorectomy in veterinary medicine
T. Suzuki, Y. Muragaki, H. Iseki, Tokyo Women's Medical Univ., H. Ishii, T. Matsuura, Tokyo Animal Medical Center (J)

117 A new haptic-feedback virtual reality neurosurgical simulator to assess performance in brain tumor debulking
A. Perin, N. Gelinis-Phaneuf, R.F. Del Maestro, McGill Univ., Montreal, Quebec, N. Choudhury, A. Cabral, E. Nadeau, M. Vincent, V. Pazos, P. Debergue, R. DiRaddo, National Research Council of Canada, Boucherville, Quebec (CDN), A. Al-Habib, Royal College of Surgeons of Ireland, Dublin (IL)

118 Real-time finite element analysis in haptic surgical simulation
B. Jo, S. Chan, K. Salisbury, S. Girod, Stanford Univ. (USA)

119 Mechatronic respiratory system simulator for neonatal applications (MERESSINA)
A. Cuttano, R.T. Scaramuzza, M. Ciantelli, M. Gentile, P. Ghirri, E. Sigali, A. Boldrini, Univ. Hosp. Pisa, P. Dario, A. Menciassi, C. Laschi, S. Tognarelli, F. Cecchi, S. Mazzoleni, Sant'Anna School of Advanced Studies, Pontedera (I)

120 An efficient construction of real-time FEM-based simulator for soft tissue deformation with large dataset
K. Morooka, T. Taguchi, R. Kurazume, M. Hashizume, T. Hasegawa Kyushu Univ., Fukuoka, X. Chen, Yamaguchi Univ., Ube (J)

121 A physical patient specific simulator for cholecystectomy training

V. Ferrari, R. Vigliani, M. Carbone, S. Condino, F. Di Puccio, M. Ferrari, F. Mosca, Univ. of Pisa, F. Porcelli, Univ. Hosp. Pisa (I)

122 SIRO – simulation software for robot based intraoperative cone beam computed tomography
M. Käseberg, S. Melnik, C. Winne, Fraunhofer Inst. for Production Systems and Design Technology, Berlin, E. Keeve, F. Stopp, Charité – Univ. Medicine Berlin (D)

123 Experimental evaluation of metal artifacts for an orbital image recording method for cone beam computed tomography

S. Engel, M. Käseberg, C. Winne, F. Fehlhaber, Fraunhofer Inst. for Production Systems and Design Technology, Berlin, F. Stopp, E. Keeve, Charité – Univ. Medicine Berlin (D)

124 Hardware-in-loop simulation of the cardiovascular system
A. Alazmani Nodeh, D. G. Keeling, P. G. Walker, M.C. Levesley, Univ. of Leeds, K. Watterson, Leeds General Infirmary (UK)

125 Design and implementation of a maxillofacial surgery rehearsal environment with haptic interaction for bone fragment and plate alignment
J. Forsslund, S. Chan, J.K. Salisbury, S.C. Girod, Stanford Univ., R. Silva, Dept. of Veterans Affairs Medical Center, San Francisco, CA (USA)

126 Brain-shift simulation using Hounsfield numbers for elasticity parameter on finite element method
N. Kume, K. Okamoto, T. Takemura, T. Kuroda, S. Miyamoto, H. Yoshihara, Kyoto Univ. Hosp., M. Nakao, K. Sakai, Kyoto Univ. Hosp. (J)

127 Learning curves of basic laparoscopic psychomotor skills in SINERGIA VR simulator
L.F. Sánchez Peralta, F.M. Sánchez-Margallo, J.L. Moyano-Cuevas, J. Blas Pagador, S. Enciso, J. Usón-Gargallo, Jesús Usón Minimally Invasive Surgery Centre, Cáceres, E.J. Gómez-Aguilera, Technical Univ. of Madrid (E)

128 Toward optimum resection margins: Preliminary studies in soft-tissue sarcoma surgery
V. Garcia-Vázquez, R. San José Estépar, R.R. Colen, J. Jayender, C.R. Walsh, M. Lapidus, C.P. Raut, K.G. Vosburgh, Brigham and Women's Hosp., Boston, MA (USA), J. Pascau, M. Desco, General Univ. Hosp. Gregorio Marañón, Madrid (E)

129 Breast tumor phantom utilizing heat coagulation to mimic nonlinear elasticity
M. Tsukune, Y. Kobayashi, T. Miyashita, M.G. Fujie, Waseda Univ., Tokyo (J)

130 Image-based 3D modelling and validation of radiofrequency interstitial tumor ablation using a tissue-mimicking breast phantom
L. Manfredi, Z. Wang, I. Aarya, M. Gueorguieva, D. Liu, H. Luo, L. Wang, S. Coleman, S. Brown, A. Cuschieri, Univ. of Dundee (UK)

131 Simulation of abdominal wall and its arteries after pneumoperitoneum for guidance of port positioning in laparoscopic surgery
S. Nicolau, J. Bano, A. Hostettler, L. Soler, J. Marescaux, IRCAD - Research Inst. Against Digestive Cancer, Strasbourg, C. Doignon, LSIT - Image Sciences, Computer Sciences and Remote Sensing Lab., Illkirch (F), H.S. Wu, M.-H. Huang, ASIA-IRCAD - Research Inst. Against Cancer of the Digestive Tract, Lukang (RC)

132 Suitability of optical coherence tomography for an intra-operative navigation system by estimation of the fiducial localization error
J. Diaz Diaz, M. Rahlves, E. Reithmeier, T. Ortmaier, Leibniz Univ. Hannover, T.S. Rau, O. Majdani, Hannover Medical School (D)

133 Optimal design of tracking targets for surgical navigation
E. Garcia, T. Hausotte, Univ. of Erlangen-Nuremberg (D)

134 Availability and quantitative evaluation of touch panel navigation system for endoscopic surgery
S. Okada, Saiseikai Suita Hosp., Osaka, J. Shimada, K. Itoh, H. Tsunozuka, K. Ichise, Kyoto Prefectural Univ. (J)

135 A novel technique for detection of Peripherally Inserted Central Catheter (PICC) using Doppler ultrasound
M. Azizian, A. Massaro, A. Beres, A. Burns, K. Davenport, P. Cheng, N. Shekhar, R. Sze, R. Shekhar, K. Cleary, Children's National Medical Center, Washington, DC (USA)

136 Error evaluation of pedicle path positioning by a C-arm image assisted navigation system
C.S. Tseng, Y.M. Liu, C.J. Chang, C.C. Wu, National Central Univ., C.D. Yang, Landseed Hosp., Jhongli (RC)

137 A patient-mount navigated intervention system for radiofrequency medial branch neurotomy
J.-L. Wang, B. Yang, Y.-H. Wang, C.-L. Yang, National Taiwan Univ., Taipei, M.-L. Lin, Taipei City Hosp. (RC)

138 Evaluation of surgical navigation system with "distance sensation" for laparoscopic surgery
Y. Honda, H. Kawahira, I. Sato, R. Nakamura, Chiba Univ. (J)

139 Vision-based navigation system and intraoperative information-measurement devices for assisting minimally invasive thoracic surgery
S. Joung, H. Kim, S. Miyajiri, H. Liao, E. Kobayashi, J. Nakajima, S. Kyo, M. Ono, I. Sakuma, The Univ. of Tokyo (J)

140 Multimodal data fusion and registration for needle guidance in percutaneous procedures
B. Maris, D. Dall'Alba, P. Fiorini, Univ. of Verona (I)

141 A fluoro-laser navigation system to guide linear surgical tool insertion
Y. Nakajima, J. Liang, T. Doke, S. Onogi, S. Ohashi, I. Ohnishi, I. Sakuma, The Univ. of Tokyo (J)

142 Marker based accuracy analysis of RGB-D sensor for image guided applications
D. Dall'Alba, B. Maris, C. Reghelin, P. Fiorini, Univ. of Verona (I)

143 Elasticity sensing forceps with stepper motor
T. Kawai, K. Nishio, Osaka Inst. of Technology, Y. Morita, Doshisha Univ., Kyotanabe, Y. Nishizawa, T. Nakamura, Kyoto Univ. (J)

144 Propulsion of magnetic microrobots in the vascular vessels of lower limbs: preliminary study
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145 A video acquisition system for autostereoscopic multi-views displays for minimally invasive surgery
A. Argiolas, M. Silvestri, T. Ranzani, M. Vatteroni, P. Dario, A. Menciassi, Sant'Anna School of Advanced Studies, Pontedera (I)

146 An improved surface registration method using robot for image-guided robot surgery
S.H. Shin, H.W. Kim, J.S. Jang, Y.S. Kim, Hanyang Univ., K.I. Koh, Koh Young Technology Inc., Seoul (ROK)

147 Robotic laser guidance for percutaneous intervention
S. Xu, A. Kapoor, N. Abi-Jaoudeh, K. Sharma, K. Imbesi, A. Venkatesan, E. Levy, B. Wood, National Inst. of Health, Bethesda, MD (USA)

148 Correlation of mastoid bone density and drilling force during direct cochlear access
T. Williamson, B. Bell, N. Gerber, M. Caversaccio, S. Weber, Univ. of Bern (CH)

149 Ex-vivo walking performance of a bio-inspired intra-abdominal robot for laparoscopic surgery
A. Montellano Lopez, R. Richardson, A. Dehghani, D. Jayne, A. Neville, Univ. of Leeds (UK)

150 Analysis of thoracic surgeon's line of sight using a multifaceted marker device
H. Tsunozuka, D. Kato, K. Terauchi, M. Shimomura, K. Ichise, S. Ishihara, J. Shimada, Kyoto Prefectural Univ. of Medicine, K. Ito, Yamashiro Public Hosp., Kizugawa, A. Nishikawa, Shinshu Univ., Ueda (J)

151 Minimally invasive transcorporeal decompression for upper thoracic OPLL using intraoperative image-based navigation system: a technical note
J.Y. Cho, S.-H. Lee, S.H. Jang, H.-Y. Lee, Wooidul Spine Hosp., Seoul (ROK)

152 A novel workflow for streamlining pediatric musculoskeletal biopsy and diagnosis
K. Cleary, R. Sze, N. Safdar, A. Krieger, J. Li, M. Azizian, Children's National Medical Center, Washington, DC (USA)

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153 PACS usage by breast surgeons
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154 Prototype of the radiation oncology teaching files system for charged particle radiotherapy

Y. Ando, Y. Okuda, M. Mukai, H. Tsuji, T. Kamada, National Inst. of Radiological Sciences, Chiba, N. Takashi, Y. Yoda, TechMatrix Corporation, Tokyo (J)

155 Radcrawler: a search engine for radiology reports

D.L. Lauretti, G. Gherarducci, L. Faggioni, E. Neri, C. Bartolozzi, Univ. of Pisa, R. Rolla, Meditec, Florence (I)

156 Contrast management system: structured reporting and data mining

G. Esposito, M. Mattiuzzi, E. Magalotti, V. Quaranta, I. Gori, Bracco Imaging SpA, Milano (I)

157 Can a PACS environment with complete functionality be expanded outside the hospital at reasonable cost by means of a cloud driven virtual desktop infrastructure?

F. Verhelle, P. Goossens, I. Willekens, F. Vandenbroucke, J. de Mey, Univ. of Brussels, R. Van den Broeck, Hogeschool-Univ. Brussels, J. Kellen, Free Univ. of Brussels (B)

158 How to realize a friendly and functional radiological network node in a wide clinical research network

A. Mazzarisi, G. Coppini, R. Favilla, E. Picano, P. Marraccini, National Research Council, G. Augiero, G. Monasterio Foundation, G. Gabbriellini, P. Longo, ESTAV Nord Ovest, Pisa, E. Neri, L. Faggioni, L. D'Errico, C. Bartolozzi, Univ. of Pisa, M. Bianchi, Univ. Hosp. Pisa (I)

159 A RFID based system to provide "just in time" access to data and images from any HIS, RIS or PACS system by means of Document Archiving and Communication System (DACS)

G. Dalbow, A. Darkazanli, Civo Medical Solutions, Edwards, CO (USA)

160 An image retrieval interface for volumetric multi-modal medical data: application to PET-CT content-based image retrieval

A. Kumar, J. Kim, L. Bi, D. Feng, Univ. of Sydney (AUS)

161 IHE/XDS-based Infrastructure for information management of model guided therapy

P. Liebmman, J. Meier, T. Neumuth, Innovation Center Computer Assisted Surgery (ICCAS), Leipzig (D)

162 Assuring lifelong computer based patient records by means of Document Archiving and Communication System (DACS)

H. Takeda, Graduate School of Health Care Sciences, Osaka, Y. Matsumura, Osaka Univ., T. Yamazaki, T. Yamada, Fuji Xerox Co.Ltd, Tokyo (J)

163 The software architecture of a telecommunication system for a nationwide trauma network

U. Engelmann, German Cancer Research Center (DKFZ), Heidelberg, H. Muench, C. Bohn, A. Schroeter, T. Weires, CHILI GmbH, Dossenheim, R. Weininger, Pegasus GmbH, Regensburg, M. Staemmler, Univ. of Applied Sciences, Stralsund, M. Walz, TÜV SÜD Life Service GmbH, Frankfurt, G. Weisser, Heidelberg Univ., Mannheim, J. Sturm, Akademie der Unfallchirurgie, Berlin (D)

164 The definition of a new organizational, technology-based, integrated home care model

F. Pierotti, G. Turchetti, I. Palla, L. Trieste, Sant'Anna School of Advanced Studies, Pontedera (I)

165 Economic evaluation of the acquisition of a remote monitoring system in the framework of "Chronic Care Model"

F. Pierotti, G. Turchetti, I. Palla, Sant'Anna School of Advanced Studies, F. Vitucci, I. Del Chicca, Wireless Integrated Network, Pontedera, F. De Negri, Univ. Hosp. Pisa (I)

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166 Computer-aided detection scheme for clustered microcalcifications in telediagnostic system via telemedicine network

R. Nakayama, N. Nakako, A. Hizukuri, N. Nagasawa, S. Kobayashi, K. Takeda, Mie Univ., Tsu, K. Namba, Hokuto Hosp., Obihiro (J)

167 Software for chemotherapy response prediction in DCE breast images using shape descriptors

A. Ahmed, P. Gibbs, M. Pickles, L. Turnbull, Hull Univ. (UK)

168 Fully automatic lesion detection algorithm using the Hough transform in 3-D ultrasound breast images

D. Yu, S. Lee, J.W. Lee, S. Kim, ETRI – Electronics and Telecommunications Research Inst., Daejeon (ROK)

169 Improvement of CAD scheme for histological classification of masses on ultrasonographic images by using objective features based on clinicians' subjective impressions

A. Hizukuri, R. Nakayama, Y. Kashikura, T. Ogawa, S. Tsu-ruoka, Mie Univ., Tsu (J)

170 A computer aided detection system for lung nodule identification in computed tomography images

N. Camarlinghi, INFN – National Inst. of Nuclear Physics, Pisa (I)

171 A fast algorithm to identify internal lung nodules in a CAD system for chest Computed Tomography (CT)

F. Bagagli, N. Camarlinghi, M.E. Fantacci, Univ. of Pisa (I)

172 Volumetric analysis approaches for computer aided detection of lung nodules in CT images

S. Trombella, N. Camarlinghi, A. Retico, M.E. Fantacci, Univ. of Pisa (I)

173 Validation of a computer aided detection system for lung nodule detection in computed tomography images on a combined dataset annotated according to different protocols

R. Scandiffio, M. Barattini, Univ. of Pisa (I), E. Lopez Torres, P. Cerello, CEADEN – Center of Applied Technologies and Nuclear Development, Habana (C)

174 Development of computer-aided diagnosis system using intelligent process manager of multiple image processing algorithms for full automated detection of tumors

K. Matsuzaki, J. Miyakoshi, S. Yui, H. Yoshida, T. Irie, Hitachi, Ltd., Tokyo (J)

175 Anisotropy CT imaging in the diagnosis of infected pancreatic necrosis

A. Litvin, Gomel Regional Clinical Hosp., V. Kovalev, Belarus National Academy of Sciences, Minsk (BY)

176 The comparison of glioma grading performance using histogram analysis with apparent diffusion coefficient between in total tumor area and in viable tumor cell area

J.W. Lee, S. Lee, ETRI – Electronics and Telecommunication Research Inst., J. Jeong, Korea Advanced Inst. of Science and Technology, Daejeon, S.H. Choi, J.-H. Kim, C.-H. Sohn, Seoul National Univ. College of Medicine, Seoul (ROK)

CMI

Thursday, June 28, 2012

15:30 – 17:00 CMI Poster Presentation

Session Chairs: Yoshihiko Hayakawa, PhD, MSc (J)
Silvio Diego Bianchi, MD (I)

Presenters will be present at their posters to answer questions.

177 Missing teeth reconstruction by statistical shape modeling in CT datasets

M. Reza Soltaninejad, R. Aghaeizadeh Zoroofi, G. Shirani, Univ. of Tehran (IR)

178 Effect of reconstruction filter on image quality in dental CBCT

Y. Houno, Y. Kodera, Nagoya Univ., T. Hishikawa, K. Goto, Aichi Gakuin Univ. (J)

179 Radiographic measurements of the nasopalatal canal and surrounding bone: a comparative pilot study

S. Murat, K. Kamburoglu, Ankara Univ. (TR)

180 Observation of the rare bony canal in the mandibular ramus using CBCT

T. Kawai, R. Asaumi, Y. Kumazawa, I. Sato, T. Yosue, Nippon Dental Univ., Tokyo (J)

181 Three-dimensional observation of the maxillary tuberosity and the surrounding structures using CBCT

R. Asaumi, T. Kawai, Y. Kumazawa, I. Sato, T. Yosue, Nippon Dental Univ., Tokyo (J)

182 Asymmetric healing formation of a calcium phosphate biomaterial graft donated to a mandibular cystic bone defect

C. Kober, Faculty of Life Sciences, Hamburg (D), C. Hellmich, Technical Univ. of Vienna (A), A. Gurin, V. Komlev, Central Scientific Research Inst. of Oral and Maxillofacial Surgery, Moscow (RUS)

183 Correlation between facial morphology change and mandibular movement change following orthognathic surgery

D.-S. Kim, W.-J. Yi, W.-J. Lee, S.-C Choi, S.-S Lee, M.-S. Heo, K.-H. Heo, S.-J. Hwang, Seoul National Univ. (ROK)

CARS

184 A new operating room generation: definition for "Surgical Deck"

I. Gollnick, IRDC – International Reference and Development Centre, Leipzig (D)

185 A time and resource management support system for the digital operating room based on surgical process models

T. Neumuth, S. Franke, E. Schreiber, Innovation Center Computer Assisted Surgery (ICCAS), Leipzig (D)

186 MultiSlice Computed Tomography (MSCT) and 3D reconstruction of Etruscan Funerary Urns in archaeology

G. Fornaciari, S. Minozzi, J. Bagnoli, V. Giuffra, V. Ferrari, D. Caramella, F. Mosca, Univ. of Pisa, E. Paribeni, Superintendence to Archaeological Properties of Tuscany, Pisa (I)

187 Augmented reality visualization using image-overlay for MR-guided interventions: performance assessment of paravertebral sympathetic perineural injections in cadavers at 1.5 tesla

G. Fichtinger, T. Ungi, Queen's Univ., Kingston, Ontario (CDN), J. Carrino, J. Fritz, P. U-Thainual, I. Iordachita, The Johns Hopkins Univ., A. Flammang, Siemens Corporate Research, Baltimore, MD (USA)

188 Magnetizing the vascular obstacles and debris; a potential method of therapy

M. Khorami Llewellyn, A. Menciassi, P. Dario, Sant'Anna School of Advanced Studies, Pontedera, D. Caramella, Univ. of Pisa (I)

189 Detection of retina internal limiting membrane in OCT images

W. Wiclawek, Silesian Univ. of Technology, Gliwice (PL)

190 Comparative study on coblation nucleoplasty versus conservative management on protruded lumbar discopathy – a randomized controlled trial

M. Khadivi, F. Esmayili, V. Rahimi Movaghar, S. Abdollahzade, Tehran Univ. of Medical Sciences (IR)

191 Stress analysis of spinal cord compression in cervical vertebra extension position by ligamentum flavum

M. Matsuda, S. Yasuda, Kobe Univ. (J)

192 Robotic transperineal prostate cancer mapping for focal therapy: correlating biopsy plan with whole-mount prostatectomy specimens

S.S.H. Ho, S.P.J. Yuen, W.S.C. Cheng, Singapore General Hosp. (SGP)

193 Application of regional extraction technology to pathological image diagnosis and cytoscreening

Y. Donomae, K. Abe, H. Takeo, Kanagawa Inst. of Technology, Y. Nagai, National Cancer Center, Tokyo (J)

194 Tumor classification for volumetric tracking of optic pathway gliomas in longitudinal studies: method and case study

L. Joskowicz, L. Weizman, The Hebrew Univ. of Jerusalem, D. Ben Bashat, B. Shofty, S. Constantini, L. Ben Sira, Tel Aviv Sourasky Medical Center (IL), D. Rubin, K. Yeom, Stanford Univ. (USA)

195 Tumor response prediction to neo-adjuvant chemotherapy for breast cancer: dependent on ultrasonic vascularity morphology

Y.-L. Huang, D.-R. Chen, W.-T. Cheng, Tunghai Univ., Taichung (RC)

196 Technology for estimating cancer risks of diagnostic medical exposure

E. Pryakhin, A. Menyaylo, V. Ivanov, S. Chekin, V. Kashcheev, Ministry of Health and Social Development of the Russian Federation (MRRC), Obninsk (RUS)

197 Knowledge driven image analysis for quantification of somatostatin receptor expression in tumor tissue and correlations to PET/CT uptake values in the context of personalized medicine

M. Athellogou, R. Schoenmeyer, G. Binnig, Definiens AG, Munich, R.P. Baum, D. Kaemmerer, Zentralklinik Bad Berka, P. Vikas, Charité, Univ. Medicine Berlin, A. Lup, Friedrich Schiller Univ. Jena (D)

198 Biomechanical analysis of the human hip joint during extreme movements

L. Assassi, N. Magnenat-Thalmann, Univ. of Geneva (CH)

International Journal of Computer Assisted Radiology and Surgery

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IPCAI Proceedings

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Marina di Pisa (distance from Pisa 13 km)

Marina di Pisa is set in a wonderful scenery: the curved shoreline of San Rossore Estate and the outline of the Apuan Alps, with the horizon that seems to dive right into the sea.



Tirrenia (distance from Pisa 17 km)

The wide stretch of beach is mostly occupied by summer resorts but there are also short stretches of free beach that are perfect for sunbathing and enjoying the clear, blue sea. Tirrenia's pine woods and dunes reserve – a protected area of unique flora and fauna run by the WWF – are perfect for relaxing walks, hikes and bicycle and horse rides.



Livorno (distance from Pisa 25 km)

Livorno was founded in the second half of the 16th century and many reminders of the "Nations" which contributed to its birth and growth are still to be found in its churches, palazzos, historic cemeteries, archives and food. Its unique, original history made Livorno an open, welcoming city, a meeting place for religions and different traditions. Guarding the port is the Old Fortress, with the imposing Mastio di Matilde, connected by the city's inland waterways to the New Fortress in the heart of the city centre.



Lucca (distance from Pisa 30 km)

Lucca is a walled city with one of the best-preserved walls in Italy. Atop the walls are walking and bicycling paths and gardens, allowing you to walk completely around Lucca's historic center. Lucca has several well-preserved towers from where you can get fabulous views of the city by climbing to the top. Lucca is a good city for food shopping and restaurants.



Casciana Terme (distance from Pisa 38 km)

Tucked away in the pleasant landscape of the Pisan hills, Casciana Terme is a small and comforting town that conserves an ancient and precious heart: its beneficial thermal waters and the charming location allows guests to Casciana Spa to take peaceful strolls and unveil the marvellous natural surrounds and picturesque hamlets steeped in art, history and ancient traditions.



Volterra (distance from Pisa 65 km)

Volterra is a gem of Etruscan, Roman, medieval and Renaissance art perched on a hill from where it governs the Cecina Valley. A simple stroll through the streets of the historical centre can reveal the city's artistic heritage. Today, it has a distinctly medieval look but its Etruscan origin is still very much in evidence in a city whose name derives from the Etruscan Velathri, later adapted to the Latin Volaterrae.



Bolgheri (distance from Pisa 70 km)

Immortalized in the verses of Giosuè Carducci's poem "Davanti a San Guido", this ancient village emanates a unique charm. A short distance from the sea, surrounded by countryside rich with vineyards and olive trees, the village with its harmonious architecture is entered through a red brick castle, and is characterized by paved alleys and ancient stone palazzos adorned with geraniums. Craft shops, wine shops, trattorias and well-known restaurants offer local products and the traditional cuisine of this area, accompanied by splendid Bolgheri DOC wines.



Florence (distance from Pisa 100 km)

Florence is one of the most important Renaissance architectural and art centers. Its Duomo, Baptistery and their large piazza are magnificent. Florence has several interesting museums with many famous paintings and sculptures. There are also Medici palaces and gardens.



Cinque Terre (distance from Pisa 120 km)

A territory in which sea and land are founded forming a unique and evocative area. 18 kilometres of rocky coastline abounding with abundant bays, beaches and deep sea, surrounded by mountains running parallel to the coast. Terracings cultivated with vineyards and olives, kept under control by old dry stone walls. A naturalistic heritage of great variety. Paths and mule tracks look onto breathtaking views. Five villages, Riomaggiore, Manarola, Corniglia, Vernazza, Monterosso face onto the sea.



Siena (distance from Pisa 160 km)

Siena is a classic medieval hill town in Tuscany famous for its large fan-shaped piazza, Piazza del Campo, and summer horse-race, known as Il Palio. Siena's tall bell tower, Torre del Mangia, dominates Piazza del Campo. Siena offers other good tourist sites including its cathedral and museums.



Arezzo (distance from Pisa 160 km)

Arezzo its ancient origins are verified by the stone tools and the so-called Man of the Elm discovered here and found to date back to the Paleolithic era. It has Etruscan origin and became one of the most important cities in Tuscany, due to its strategic position along the Via Cassia. Even though the Medieval center was destroyed during the World War II, Arezzo has plenty of monuments, churches and museums remaining that offer visitors a chance to step back into history.

Around Pisa