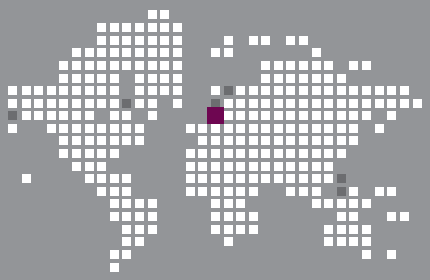
PRELIMINARY PROGRAM

CARS 2018

COMPUTER ASSISTED RADIOLOGY AND SURGERY

32nd International Congress and Exhibition



June 20–23, 2018
Berlin, Germany

Main Themes

- Medical Imaging
- Computed Maxillofacial Imaging
- Image Processing and Visualization
- Multidisciplinary Computational Anatomy
- E-Health and IHE
- 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
- Information Processing in Computer-Assisted Intervention
- Digital Operating Room
- Human-Machine Interface
- Pathology Informatics
- Machine Intelligence
- Integrated Patient Care
- Tumor Boards
- Innovative Clinical Investigations

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Preliminary Program

32nd International Congress and Exhibition on Computer Assisted Radiology (CAR)

Chair: Ulrich Bick, MD (D)

Thursday, June 21, 2018

8:00 Medical Imaging

Session Chairs: Elizabeth Beckmann, BSc (UK), Ulrich Bick, MD (D), Jasper Nijkamp, PhD (NL)

Towards online surgical margin assessment using micro-CT
J. Nijkamp, L. Ploeger, The Netherlands Cancer Institute, Antoni van Leeuwenhoek, Amsterdam (NL) [162]

Non-Iterative reconstruction based image enhancement of lung cancer screening Low-dose CT using a Neural Network
Y. Nagaraj, G. van Praagh, D. Han, M. A Heuvelmans, M. Rook, M. D. Dorrius , M. Oudkerk, P. M A van Ooijen, University of Groningen, University Medical Center Groningen, Groningen (NL) [165]

Tomosynthesis implementation with adaptive online calibration on clinical C-arm systems
F. G. Zöllner, K. Chung, L. R. Schad, University of Heidelberg, Faculty of Medicine Mannheim (DE) [18-00024]

Validation of a 4D CT method for quantitative analysis of carpal motion using clinical CT protocols
J. Dobbe, M. G. De Roo, S. Strackee, G. Streekstra, University of Amsterdam, Amsterdam (NL) [161]

Assessment of cerebral ischemic changes in rats using different diffusion-weighted signal models for intravoxel incoherent motion analysis at 11.7T
S. Fujiwara, Y. Mori, D. M. de la Mora, K. Yoshida, K. Ogasawara, Y. Yoshioka, Iwate Medical University, Morioka (J) [74]

Pulmonary perfusion diagnosis based on time-series analysis of X-ray translucency with dynamic flat-panel detector imaging: an animal-based study
R. Tanaka, T. Tani, N. Nitta, T. Tabata, N. Matsutani, S. Muraoka, S. Noji, T. Yoneyama, S. Sanada, Kanazawa University, Kanazawa (J) [18]

Comparison of the Application of B-Mode and Strain Elastography Ultrasound in the Prediction of Lymph Node Metastasis of Papillary Thyroid Carcinoma based on a Radiomics Approach
J. Yu, T. Liu, F. Ge, Y. Guo, Y. Wang, L. Cui, Fudan University, Department of Electronic Engineering (CN) [18-00020]

Ultrasound Stone Detection: Discovery and Analysis of Two Stone-Related Components in Reflected Signal and Their Role in Etiology of Twinkling Artifact
D. Leonov, N. Kulberg , A. Gromov, V. Fin, M. Usanov, V. Kovbas, K. Sergunova, N. Strelkov, A. Vladzimirskiy, S. Morozov, Research and Practical Center of Medical Radiology, Moscow (RUS) [13]

Improvement of robustness of SLAM-based bronchoscope tracking by posture guided feature matching
C. Wang, M. Oda, Y. Hayashi, K. Mori, Nagoya University, Graduate School of Information Science, Nagoya (J) [252]

Assessment of radiation risk associated with single PET/CT scanning
V. Ivanov, V. Kashcheev, E. Pryakhin, Medical Radiological Research Center of the Ministry of Health and Social Development of the Russian Federation (MRRC), Obninsk (RUS) [101]

Thursday, June 21, 2018

Imaging Informatics

Session Chairs: Miguel Ángel González Ballester, PhD (E), Gabriele von Voigt, PhD (D), Klaus D. Toennies, PhD (D), Cristian A. Linte, PhD (USA), Leo Joskowicz, PhD (IL), Kensaku Mori, PhD (J)

FCN Based Approach For The Automatic Segmentation Of Bone Surfaces In Ultrasound Images
M. Villa, G. Dardenne, M. Nasan, H. Letissier, C. Hamitouche, E. Stindel, LaTIM, Inserm (FR) [18-00019]

Automatic Cardiac MRI Segmentation via Context-aware Recurrent Generative Adversarial Neural Network
M. Rezaei, H. Yang, C. Meinel, Hasso Plattner Institute, Internet Technology and System (DE) [18-00063]

Breast tissue segmentation and density quantification from MRI using convolutional neural networks
M. I. García Ocaña, K. López-Linares Román, G. Maclair, M. Azpíroz Puente, J. A. Romero Martin, V. Belloch Ugarte, J. M. Santabárbara, M. î González Ballester, I. Macía, Vicomtech, San Sebastián (E) [146]

FCNN-based axon segmentation for convection-enhanced delivery optimization
M. Gazzara, M. Vidotto, L. S. Mattos, G. Ferrigno, E. De Momi, S. Moccia, Politecnico di Milano, DEIB (IT) [18-00052]

Surgical tools segmentation in laparoscopic images using convolutional neural networks with uncertainty estimation and semi-supervised learning
Y. Hiasa, Y. Otake, S. Nakatani, H. Harada, S. Kanaji, Y. Kakeji, Y. Sato, Nara Institute of Science and Technology, Ikoma (J) [73]

Unsupervised 3D micro-CT image segmentation based on a hybrid of VAE and GAN
T. Moriya, H. Roth, S. Nakamura, H. Oda, K. Nagara, M. Oda, K. Mori, Nagoya University, Aichi (J) [75]

LSTM Fully Convolutional Neural Networks for Umbilical Cord Segmentation in TTTS foetal surgery planning
J. Torrents-Barrena, G. Piella, N. Masoller, E. Gratacós, E. Eixarch, M. Ceresa, M. A. Gonzalez Ballester, Universitat Pompeu Fabra, Barcelona (E) [217]

Auto-context 3D fully convolutional networks for multi-scale semantic segmentation of abdominal CT volumes
H. Roth, C. Shen, H. Oda, T. Sugino, M. Oda, Y. Hayashi, K. Misawa, K. Mori, Nagoya University, Nagoya (J) [134]

Deep Dense Multipath Neural Network For Prostate Segmentation In Magnetic Resonance Imaging
J. T. Kwak, M. Nguyen Nhat To, D. Quoc Vu, B. Turkbey, P. L. Choyke, Sejong University, Department of Computer Science and Engineering (KR) [18-00068]

A Dataset of Laryngeal Endoscopic Images with Comparative Study on Convolution Neural Network Based Semantic Segmentation
M.-H. Laves, J. Bicker, L. A. Kahrs, T. Ortmaier, Leibniz University Hannover, Institute of Mechatronic Systems (DE) [18-00055]

Abdominal artery segmentation from CT volumes using fully convolutional network for small artery segmentation
M. Oda, T. Kitasaka, K. Misawa, M. Fujiwara, K. Mori, Nagoya University, Nagoya (J) [189]

Evaluation of 3D fully convolutional networks for multi-class organ segmentation in contrast-enhanced CT
C. Shen, H. R. Roth, H. Oda, M. Oda, Y. Hayashi, K. Misawa, T. Miyamoto, K. Mori, Nagoya University, Nagoya (J) [253]

Fully Automatic Segmentation of Paraspinal Muscles from 3D Torso CT Images via Multi-scale Iterative Random Forest Classifications
G. Zheng, N. Kamiya, J. Li, M. Kume, H. Fujita, D. Shen, Universität Bern, Institute for Surgical Technology and Biomechanics (CH) [18-00047]

Constrained convexity shape prior segmentation of retinal cross-related structures
J. Escorcia-Gutierrez , J. Torrents-Barrena, P. Romero-Aroca, A. Valls, D. Puig, Universitat Rovira i Virgili, Tarragona (E) [95]

Magic Wand: A 3D-Based Interactive Algorithm to Accelerate CBCT Segmentation
P. Yuan, F. Afonso, H. Deng, J. Li, C. F. Yao, J. Vu, W. Xi, M. Huang, F. Elias, D. Alfi, J. Gateno, J. Xia, Houston Methodist Hospital, Houston Methodist Research Institute, Houston, TX (USA) [50]

Designing Ensembles for Uncertainty-aware Vessel Segmentations from MRI Data
G. Ristovski, M. Jawad, H. K. Hahn, L. Linsen, Jacobs University Bremen gGmbH, Department of Computer Science (DE) [18-00022]

Parotid salivary gland segmentation in Sialo-CBCT scans: method and preliminary results
O. Shauly, L. Joskowicz, E. Istoyler, C. Nadler, The Hebrew University of Jerusalem, Jerusalem (IL) [29]

Semi-supervised spherical K-means for segmenting idiopathic interstitial pneumonia from chest CT images
C. Wang, T. Moriya, Y. Hayashi, M. Oda, H. Ohkubo, K. Mori, Nagoya University, Nagoya (J) [251]

Analysis of scaphoid fracture kinematics, a clinical application of 4-dimensional computed tomographic imaging
M. G. de Roo, J. G. Dobbe, G. J. Streekstra, S. D. Strackee, Academic Medical Center, University of Amsterdam, Amsterdam (NL) [173]

Vascular virtual handling in three-dimensional image for endovascular intervention assistance
T. Shinohara, Y. Nishida, N. Nakasako, M. Ogura, Kindai University, Kinokawa-shi (J) [65]

Background Lung Tissue Deformation Correction and Ground Glass Nodule Tracking using A Feature-based Affine Registration
K. Ben Zikri, M. Helguera, N. Cahill, D. Shrier, C. Linte, Rochester Institute of Technology, Rochester, NY (USA) [238]

Evolutionary Image Simplification for Lung Nodule Classification with Convolutional Neural Networks
D. Lückehe, G. von Voigt, Leibniz University Hannover, Regionales Rechenzentrum für Niedersachsen (DE) [18-00057]

A PRM approach for early prediction of breast cancer response to chemotherapy based on registered MR images
M. El Adoui, S. Drisis, M. Benjelloun, Universite de Mons, Department of Computer Science (BE) [18-00083]

Non-rigid Registration of 3D Ultrasound for Neurosurgery using Automatic Feature Detection and Matching
I. P. Machado, M. Toews, J. Luo, P. Unadkat, E. George, J. Martins, P. Golland, S. Pieper, S. Frisken, A. J. Golby, W. M. Wells III, Instituto Superior Técnico, Mechanical Department – IDMEC (PT) [18-00029]

Research PACS for Diabetic Retinopathy Screening
C. Costa, M. Pedrosa, J. M. Silva, S. Matos, Universidade de Aveiro, Aveiro (P) [179]

Saturday, 23 June, 2018

Computer Assisted Radiation Therapy

Session Chairs: Achim Schweikard, PhD (D), Gabor Fichtinger, PhD (CDN)

TBA
Invited Speaker

Target Definition with 3D Surface Scanning for Orthovoltage Radiation Therapy Planning
A. Ilina, C. Pinter, A. Lasso, I. Lai, C. Joshi, K. Alexander, L. J. Schreiner, T. Hanna, G. Fichtinger , Queen's University, Ottawa (CDN) [198]

A stochastic optimization approach accounting for uncertainty in HDR brachytherapy needle placement
T. Yu, F. A. Siebert, A. Schlaefer, University of Technology Hamburg-Harburg, Hamburg (D) [186]

Mathematical modeling of acute rectal toxicity to compare two patient positioning methods for prostate cancer radiotherapy.
M. Fatyga, X. Liu, J. Li, S. Schild, W. Wong, S. Vora, M. Herman, M. Schild, Mayo Clinic Arizona, Phoenix, AZ (USA) [7]

CARS – Computer Assisted Radiology and Surgery

Friday, June 22, 2018

1-Innovations and Trends In Cardiovascular Intervention Support

Session Chairs: Anja Hennemuth, PhD (D), Franziska Degener (D)

Navigation support through shape sensing
Horst Karl Hahn, PhD, Fraunhofer MEVIS, Bremen (D)

Non-invasive imaging for intervention support
Tobias Schaeffter, PhD, Physikalisch-Technische Bundesanstalt (D)

Model based therapy planning of valve intervention
Simon H. Sündermann, University Hospital Zurich (CH)

Intraoperative guidance
Sandy Engelhardt, Deutsches Krebsforschungszentrum, Heidelberg (D)

Cardiac X-ray Image-based Haptic Guidance for Robot Assisted Coronary Intervention: Phantom Evaluation

J. Ryu, D. Kim, A. Tahir, S. Park, M. H. Jeong, Gwangju Institute of Science and Technology, School of Mechanical Engineering (KR) [18-00050]

2 Modelling and simulation for treatment planning

Session Chairs: B. Köhler (D), S. Nordmeyer (D)

Clinical applications (CFD models)
Marcus Kelm, German Heart Institute, Berlin (D)

CFD methods
Leonid Goubergrits, German Heart Institute, Berlin (D)

Virtual Downsizing for Decision Support in Mitral Valve Repair
M. Neugebauer, L. Tautz, M. Hüllebrand, S. Sündermann, F. Degener, T. Kühne, V. Falk, A. Hennemuth, Fraunhofer MEVIS, Institute for Medical Image Computing (DE) [18-00043]

Development of a modeling pipeline for the prediction of hemodynamic outcome after virtual mitral valve repair using image based CFD
K. Vellguth, J. Brüning, L. Goubergrits, L. Tautz, A. Hennemuth, U. Kertzscher, F. Degener, M. Kelm, S. Sündermann, T. Kühne, Charite Universitatsmedizin Berlin, Institute for Imaging Science and Computational Modelling in Cardiovascular Medicine (DE) [18-00034]

3-Advanced Imaging of Heart and Valve Function

Session Chairs: H. Mirzaee (D), Bernhard Preim, PhD (D)

Nichtinvasiven MR-basierten Hämodynamik bei Vitien
Jeanette Schulz-Menger, Max-Delbrück-Centrum für Molekulare Medizin in der Helmholtz-Gemeinschaft (MDC), Berlin (D)

Novel biomarkers for early disease detection (imaging and modeling)
Sebastian Kelle, German Heart Institute, Berlin (D)

A Novel 3D-CNN Approach for Ejection Fraction Classification in Transthoracic Echocardiography
J. M. Silva, A. Guerra, J. F. Silva, C. Costa, S. Matos, Universidade de Aveiro, Aveiro (P) [210]

Extraction of Open-State Mitral Valve Geometry from CT Volumes
L. Tautz, M. Neugebauer, M. Hüllebrand, K. Vellguth, F. Degener, S. Sündermann, T. Kühne, V. Falk, A. Hennemuth, Fraunhofer MEVIS, Institute for Medical Image Computing (DE) [18-00044]

Accuracy of mitral valve imaging in dynamic CT
C. Vannelli, J. Moore, A. So, W. Xia, T. Peters, Robarts Research Institute, London (CDN) [240]

4-Analysis and Simulation of Cardiac Electrophysiology and Biomechanics

Session Chairs: Klaus D. Toennies, PhD (D), Titus Kühne, MD (D)

Electrophysiology (electrophysiological models)
Edward Vigmond, University of Bordeaux (F)

Electro-biomechanical modelling
Gernot Plank, Medical University of Graz (A)

Imaging and Clinical needs
Daniel Messroghli, German Heart Institute, Berlin (D)

Influence of Fiber Connectivity in Simulations of Cardiac BioMechanics
A. Borràs, D. Gil, R. Aris, R. Sebastián, M. Vázquez, Universitat Autonoma de Barcelona (UAB), Computer Vision Center (ES) [18-00056]

Ventricular Tachycardia Ablation Assisted by Multimodal Images Fusion
N. Courtial, A. Simon, M. Lederlin, S. Bruge, R. Martins, M. Garreau, Université Rennes 1, Rennes (F) [192]

Model Checking for Trigger Loss Detection During Doppler Ultrasound Guided Fetal Cardiovascular MRI
S.-T. Antoni, S. Lehmann, M. Neidhardt, K. Fehrs, C. Ruprecht, F. Kording, G. Adam, S. Schupp, A. Schläfer, Hamburg University of Technology, Institute of Medical Technology (DE) [18-00081]

Micro-focus X-ray CT of the heart: A comparison with X-ray refraction-contrast CT
H. Oda, H. Roth, N. Sunaguchi, D. Shimao, T. Sugino, M. Oda, T. Akita, Y. Narita, S. Ichihara, T. Yuasa, M. Ando, K. Mori, Nagoya University, Nagoya (J) [40]

Saturday, June 23, 2018

Clinical Decision Making

Session Chairs: Mario A. Cypko, PhD (NL), Bernard Gibaud, PhD (F), Andreas Melzer, MD, DDS (UK), Seong K. Mun, PhD (USA)

Micro-CT imaging for intra-operative assessment of surgical resection margins during breast conserving surgery
N. Janssen, M. van Seijen, C. Loo, M. J. Vrancken Peeters, I. Ioan, J. J. Sonke, J. Nijkamp, Antoni van Leeuwenhoek Hospital – Netherlands Cancer Institute, Amsterdam (NL) [42]

In silico and ex vivo validation of a microwave endoscopic system for colon examinations
M. Guardiola, J. Romeu, G. Fernández-Esparrach, M. A. Gonzalez-Ballester, O. Camara, Universitat Pompeu Fabra, Barcelona (E) [86]

How modular technologies and personalized healthcare will influence the design of hospital architecture and care facilities
O. Ratib, C. AMATO, Cannon Design, Los Angeles, CA (USA) [130]

An only navigation-assisted platform for a multidisciplinary oncological network
S. Catanzaro, C. Copelli, P. Corsa, A. Manfuso, L. Cassano, K. Tewfik Hanna, N. Pederneschi, A. Mastromatteo, R. Cocchi, Hospital Casa Sollievo della Sofferenza- IRCCS, San Giovanni Rotondo (I) [191]

A Knowledge-based Data Entry Form for High Quality Clinical Data Collection
C. Unger, M. Stoehr, S. Oeltze-Jafra, M. A. Cypko, University of Leipzig, Leipzig (D) [206]

Trans-border Telemedicine Practices: An Institutional Experience
S. Mishra, R. Daman, I. Singh, V. Singh, K. Pathak, SGPGIMS – Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, Uttar Pradesh (IND) [46]

Examining the utility of clinical, laboratory and radiological data for scoring severity of pulmonary tuberculosis
V. Kovalev, V. Liauchuk, A. Skrahina, A. Astrauko, A. Rosenthal, A. Gabrielian, United Institute of Informatics, Minsk (BY) [47]

Computer-assisted disaster response: benefits for global healthcare
R. Andrews, L. Quintana, T. Khan, NASA Ames Research Center, Los Gatos, CA (USA) [64]

Development of a National Electronic Interval Cancer Review for breast screening
M. Halling-Brown, M. Patel, W. Matthew, K. Young, Royal Surrey County Hospital, Guildford, Surrey (UK) [66]

Making Fully automatic quantification of mean-upper cervical cord area: Agreement with multiple human raters.
F. Weiler, J. Klein, J. Gregori, L. Spiess, H. Hildebrandt, S. Heldmann, Fraunhofer MEVIS, Bremen (D) [232]

A performant and fully DICOM compliant Web PACS for Digital Pathology
R. Lebre, T. Godinho, C. Costa, L. Silva, University of Aveiro, Aveiro (P) [235]

Information Architecture for a Patient-Specific Dashboard in Head and Neck Tumor Boards
A. Oeser, J. Gaebel, A. Dietz, S. Wiegand, S. Oeltze-Jafra, Universitat Leipzig, Innovation Center Computer Assisted Surgery (DE) [18-00038]

Thursday, June 21, 2018

IFCARS / CAD / EuSoMII Joint Session on Machine Intelligence
Chairs: Heinz U. Lemke, PhD (D), Hiroyuki Yoshida, PhD (USA)

H.U. Lemke
S. Morozov
H. Yoshida
M. Hashizume

Convolutional Properties and Their Applications in a Neural Networks Setting – Data Correlation Learning or Deep Learning?
S. Lo, S. K. Mun, M. Freedman, Virginia Tech, Arlington, VA (USA) [239]

Saturday, June 23, 2018

IHE

Long term experience with setup and implementation of an IHE-based image- management and distribution system in intersectoral clinical routine
F. Schwind, H. Münch, A. Schröter, R. Brandner, U. Kutscha, A. Brandner, O. Heinze, B. Bergh, U. Engelmann, CHILI GmbH, Software Development (DE) [18-00041]

11th CARS Clinical Day

Chairs: Leonard Berliner, MD (USA), Eric vanSonnenberg, MD (USA), Hubertus Feussner, MD (D)

Wednesday, June 20, 2018

Innovations in Imaging and Interventional Radiology (IR) – Part 1

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

8:30 The Evolution of Medical School Education & Interventional Radiology Training
Invited Speaker: Eric vanSonnenberg, MD, University of Arizona College of Medicine, AZ; David Geffen School of Medicine at UCLA, CA (USA)

8:45 Expanding Role of Percutaneous Biopsy and Its Impact on Precision Medicine
Invited Speaker: Leonard Berliner, MD, New York Presbyterian-Brooklyn Methodist Hosp., Weill Cornell Medical College; Brooklyn, NY (USA)

9:00 Advances in Interventional Radiology: Innovations and Outcomes
Invited Speaker: Amber Simpson, PhD, Memorial Sloan Kettering Cancer Center, New York, NY (USA)

9:15 Robotically assisted arthrography under MR imaging
R. Monfaredi, I. Talati, K. Sharma, K. Cleary, Children's National Health System, Washington, DC (USA) [151]

9:30 Volumetric analysis of intracranial vessels – a novel tool for evaluation of cerebral vasospasm
S. R. Kantelhardt, A. Neulen, T. Pantel, A. Dieter, M. Kosterhon, M. Berres, S. C. Thal, M. A. Brockmann, University Medical Centre Mainz, Department of Neurosurgery (DE) [18-00005]

9:45 Intravascular optical coherence tomography to validate finite-element simulation of angioplasty balloon inflation
H. Azarnoush, B. Boulet, G. Lamouche, Amirkabir University of Technology, Tehran (IR) [225]

10:00 Evolving Trends in Diagnostic Imaging & Image-guided Intervention
Invited Speaker: Krishna Kandarpa, MD, PhD, NIH, Bethesda, MD (USA)

10:15 Break

Innovations in Imaging and Interventional Radiology (IR) – Part 2

Session Chairs: Krishna Kandarpa, MD (USA); Luis Donoso-Bach, MD (E)

10:30 Stanley-Baum-Lecture
To be announced
Keynote Speaker: Hans Ringertz, MD, PhD, Karolinska Hosp., Stockholm (S)

11:00 To be announced
Invited Speaker: Luis Donoso-Bach, MD, PhD, University of Barcelona (E)

11:15 Advances in PET Imaging of the Liver: Primary and Metastatic Cancer
Invited Speaker: Giuseppe Esposito, MD Georgetown Univ. Medical Center, Washington, DC (USA)

11:30 Can tumor coverage evaluated 24h post radiofrequency ablation predict local tumor progression of liver metastases?
F. Vandenbroucke, J. Vandemeulebroucke, N. Buls, R.F. Thoeni, J. de Mey, University of Brussels, Academic Hospital (BE) [18-00003]

11:45 Stereotactically navigated percutaneous microwave ablation (MWA) compared to conventional MWA: a matched pair analysis
L. P. Beyer, L. Lürken, N. Verloh, M. Haimerl, K. Michalik, J. Schaible, C. Stroszczynski, P. Wiggermann, University Hospital Regensburg, Department of Radiology (DE) [18-00048]

12:00 Training a deep learning network to assess breast cancer risk
K. Höeg Dembrower, H. Azizpour, K. Smith, E. Konuk, F. Strand, Karolinska Institute, Djursholm (S) [82]

12:15 Panel Discussion

12:30 Break

Innovations in Surgery

Session Chairs: Hubertus Feussner, MD (D), Leonard Berliner, MD (USA)

14:00 Computer- and Telematics-Assisted Surgery at the German Society of Surgery (CTAC): Towards Surgery 4.0
Invited Speaker: Hubertus Feussner, MD, Technical University of Munich (D)

14:15 Computer- and Telematics-Assisted Surgery at the German Society of Surgery (CTAC): Offensive 2025
Invited Speaker: Hubertus Feussner, MD, Technical University of Munich (D)

Innovative Clinical Investigation Presentations:

14:30 – 15:30 To be announced
Invited Speaker: To be announced

16:00 Panel Discussion: Moving into the Future of Radiology and Surgery

Session Chairs: Leonard Berliner, MD (USA), Hubertus Feussner, MD (D)

Participants: Clinical Day Speakers: Leonard Berliner, MD (USA), Luis Donoso-Bach, MD (E), Hubertus Feussner, MD (D), Eric vanSonnenberg, MD (USA), Krishna Kandarpa, MD, PhD (USA), Amber Simpson, PhD (USA), Giuseppe Esposito, MD (USA), Hans Ringertz, MD, PhD (S)

17:00 End of Session

22nd Annual Conference of the International Society for Computer Aided Surgery (ISCAS)

President: Pierre Jannin, PhD (F)

Thursday, June 21, 2018

Medical Robotics and Instrumentation – 1

Session Chairs: Byung-Ju Yi, PhD (ROK), Kevin Cleary, PhD (USA)

Design and Optimization of Concentric Tube Robots Based on Neurosurgical Tasks, Anatomical Constrains and Follow-the-Leader Deployment
X. Yang, N. Wang, S. Song, L. Liu, M. Q.-H. Meng, Harbin Institute of Technology, Shenzhen Graduate School (CN) [18-00080]

A Novel Medical Robot Architecture with ORiN for Efficient Development of Telesurgical Robots
N. Iwamoto, A. Nishikawa, T. Kawai, Y. Horise, K. Masamune, Shinshu University, Ueda (J) [127]

Pilot study on an autonomous surgical system with the markerless navigation and compact robot for oral and maxillofacial surgery
Q. Ma, E. Kobayashi, J. Wang, K. Hara, K. Masamune, I. Sakuma, The University of Tokyo, Tokyo (J) [22]

Evaluation of robotically-assisted ureteroscopy for kidney exploration in a phantom study
R. Zee, H. Fooladi Talari, C. Peters, R. Monfaredi, C. Bayne, K. Cleary, Children's National Health System, Washington, DC (USA) [55]

Automatic and Real-time Stylistic Behavior Assessment in Robotic Surgery
M. Ershad, R. V. Rege, A. Majewicz Fey, University of Texas at Dallas, Department of Electrical Engineering (US) [18-00067]

Thursday, June 21, 2018

Medical Robotics and Instrumentation – 2

Session Chairs: Paolo Fiorini, PhD (I), Jumpei Arata, PhD (J)

Robotic and electromagnetic navigation system for automatic guidance of biopsy catheters to peripheral pulmonary airway targets
L. Gruionu, C. Constantinescu, C. Ciobirca, A. Soimu (Iacob), A. L. Udristoiu, A. Saftoiu, G. Gruionu, University of Craiova, Craiova (RO) [83]

Synthetic elastic mechanism for miniaturized neurosurgical robotic forceps
J. Arata, Y. Fujisawa, R. Nakadate, K. Harada, M. Mitsuishi, K. Kiguchi, M. Hashizume Kyushu University, Fukuoka (J) [248]

Autonomous neuro-registration for robot based neurosurgery
A. Kaushik, T.A. Dwarakanath, G. Bhutani, Homi Bhabha National Institute, Engineering Sciences (IN) [18-00018]

Deep Learning with Convolutional Neural Network for Surgical Robot Kinematics Decoding and Skill Evaluation
Z. Wang, A. Majewicz Fey, University of Texas at Dallas, Mechanical Engineering (US) [18-00059]

A hyperspectral method to analyze optical tissue characteristics in vivo
E. L. Wisotzky, P. Arens, F. C. Uecker, A. Hilsmann, P. Eisert, Fraunhofer Heinrich-Hertz-Institute, Berlin (D) [154]

Force Estimation from OCT Volumes using 3D CNNs
N. Gessert, J. Beringhoff, C. Otte, A. Schläfer, Hamburg University of Technology, Institute of Medical Technology (DE) [18-00074]

Friday, June 22, 2018

Navigation – 1

Session Chairs: Ken Masamune, PhD (J), Stefanie Speidel, PhD (D)

Intraoperative electromagnetic navigation towards liver tumors: a feasibility study
O. Ivashchenko, B. Pouw, R. van Veen, K. F. Kuhlmann, N. F. Kok, E. G. Klompenhouwer, H. C. Groen, J. Nijkamp, T. J. Ruers, The Netherlands Cancer Institute, Amsterdam (NL) [9]

Open-source platform for ultrasound-based navigation in laparoscopy: Laboratory test of Single Landmark registration method
J. Pérez de Frutos, E. F. Hofstad, O. V. Solberg, G. A. Tangen, R. Marvik, T. Lango, SINTEF Teknologi og Samfunn, Medical Technology (NO) [18-00042]

An intraoperative ultrasound based navigation method for laparoscopic ablation of liver tumors
I. Paolucci, M. Schwalbe, G. A. Prevost, A. Lachenmayer, D. Candinas, S. Weber, P. Tinguely, University of Bern, Bern (CH) [43]

Peripheral nerve block support system guided by ultrasonic image
N. Takahashi, A. Hanafusa, H. Hayashi, Shibaura Institute of Technology, Saitama (J) [132]

Friday, June 22, 2018

Navigation – 2
Session Chairs: Parvin Mousavi, PhD (CDN), Jaesung Hong, PhD (ROK)

3D gaze tracking for skill assessment in ultrasound-guided needle insertions
D. García-Mato, M. S. Holden, A. Lasso, A. Szulewski, J. Pascau, G. Fichtinger, Universidad Carlos III de Madrid, Leganés Madrid (E) [153]

A laser modular system attached to a C-arm fluoroscopy for guidance of insertion position and posture with a mimicking fluoroscopy
S. Joung, C. W. Park, H. W. Lee, Y. Park, I. Park, Kyungpook National University, Deagu (ROK) [39]

Features from non-linear scale space using fast guided filter for navigation system in Water-Filled Laparoendoscopic Surgery (WaFLES)
M. Kontto, R. Nakamura, Chiba University, Chiba (J) [110]

Enhancing Depth Perception for ORB-SLAM2 based Endoscopic 3D Mapping
D. Zhai, X. Deng, W. Si, X. Liao, Y. Dai, P. A. Heng, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen (CHN) [156]

3D Printing Customized Titanium Plates Associated With Surgical Navigation Guided Precise Correction of Complex Midfacial Post-Traumatic Deformities
S. Zhang, C. Yang, J. Wu, Y. Zhang, B. Xu, S. G. Shen, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai Key Laboratory of Stomatology, Shanghai (CHN) [170]

Preclinical Assessment of a Novel Intraoperative Ultrasound Probe for Transsphenoidal Surgery
S. Mihcin, H. Marcus, R. Delaunay, E. Maneas, W. Xia, S. Ourselin, A. Desjardins, N. Dorward, T. Vercauteren, University College London, London (UK) [136]

Microscopic image-based determination of stapes prosthesis length
J. C. Rosenthal, N. Gard, A. Schneider, P. Eisert, Fraunhofer-Institut fur Nachrichtentechnik Heinrich-Hertz-Institut, Berlin (D) [164]

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Neurosurgery
Session Chairs: Arya Nabavi, MD (D), Amber Simpson, PhD (USA)

Endoscopic neurosurgery using operation supporting robot "iArmS": preliminary clinical application
T. Ogiwara, T. Goto, A. Nagm, T. Hasegawa, K. Hongo, Shinshu University School of Medicine, Matsumoto (J) [41]

Current experiences and future perspectives for augmented reality visualization in navigated neurosurgical interventions
A. Roethe, J. Rösler, P. Vajkoczy, T. Picht, Charité-Universitätsmedizin Berlin, Humboldt University Berlin, Berlin (D) [221]

Automatic segmentation of deep brain electrodes used in stereotactic electroencephalography (SEEG)
A. Higueras-Esteban, J. Ojeda, I. Delgado-Martíinez, C. Pérez Enríquez, L. Serrano, A. Principe, M. A. Gonzalez Ballester, R. Rocamora, L. Serra, G. Conesa, Galgo Medical S.L., Barcelona (E) [178]

Identification and quantification of the acoustic reflex with a digital surgical microscope
A. Schneider, A. Bicer, K. Ehrt, R. Dahl, A. Ovari, R. Mlynski, Arnold & Richter Cine Technik GmbH & Co.Betriebs KG, München (D) [194]

Adaptive infrared patterns to enhance microscope intraoperative surface reconstruction for varying zoom levels
S. Milosavljevic, Z. Bardosi, Y. Oezbek, W. Freysinger, Medical University Innsbruck, Innsbruck (A) [247]

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VR, AR and MR I

Session Chairs: Caroline Essert, PhD (F), Cristian A. Linte, PhD (USA)

3D Real-Time Assisted Surgery System Development from Using Image-guided and Electric-Field Sensing Techniques
C. H. Cheng, D. G. Liu, Feng Chia University, Taichung (RC) [123]

Development of a method of integration of electrical stimulation positions into standard brain coordinate system
K. Ohshima, I. Sato, T. Nagai, Y. Fujino, H. Yamada, M. Tamura, Y. Muragaki, K. Masamune, Future University Hakodate, Hakodate (J) [128]

A Virtual Pointer to Support the Adoption of Professional Vision in Laparoscopic Training
Y. Feng, H. McGowan, A. Semsar, H. R. Zahiri, I. M. George, T. Turner, A. Park, A. Kleinsmith, H. M. Mentis, University of Maryland, Department of Information Systems (US) [18-00062]

Preclinical quantitative validation of a laparoscopic augmented reality visualization system: preliminary results
X. Liu, L. Lau, W. Plishker, K. Sharma, T. Kane, R. Shekhar, Children's National Medical Center, Washington, DC (USA) [54]

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Virtual and Augmented Reality

Session Chairs: Marta Kersten, PhD (CDN), Roy Eagleson, PhD (CDN

Virtual Planning of mandibular Reconstructions with Iliac Crest Transplants – a semi-automatic Algorithm
S. Raith, M. Pritsch, N. Ayoub, F. Peters, F. Hölzle, A. Modabber, RWTH Aachen University Hospital, Aachen (D) [49]

Virtual surgical planning in the treatment of bony facial asymmetry
H. Yu, S. Shen, Shanghai Jiao Tong University School of Medicine, Shanghai (CHN) [8]

Design of a PVA liver phantom with respiratory motion for simulation of needle interventions
T. L. de Jong, D. R. Adrichem, J. Dankelman, J. J. van den Dobbelsteen, Delft University of Technology, Delft (NL) [169]

Develop and Validate a Finite Element Method Model for Deformation Matching of Laparoscopic Gastrectomy Navigation
T. Chen, G. Wei, W. Shi, Z. Jiang, G. Li, K. Mori, Nanfang Hospital, Guangzhou (CHN) [158]

The Use Of Augmented Reality Technology In The Treatment Of Distal Tibia Fractures
A. Sitnik, R. Gromov, A. Pavel, S. Bradko, Republican Center of Traumatology and Orthopedics, Minsk (BY) [124]

An Authoring Interface for Surgeon-Authored VR Training
M. Sarov, R. Gao, J. Youngquist , G. Sarosi , S. Kurenov , J. Peters, University of Florida, Gainesville, FL (USA) [56]

A Mixed-Reality Surgical Trainer with Comprehensive Sensing for Fetal Laser Minimally Invasive Surgery
A. Javaux, D. Bouget, C. Gruijthuijsen, D. Stoyanov, T. Vercauteren, S. Ourselin, J. Deprest, K. Denis, E. Vander Poorten, Katholieke Universiteit Leuven, Department of Mechanical Engineering (BE) [18-00036]

Saturday, June 23, 2018

ENT

Session Chairs: Raj Shekhar, PhD (USA), Nozomu Matsumoto, MD, PhD (J)

Surgical planner for cochlear implantation outcome predictions
N. Mangado, M. Ceresa, R. López-Velasco, P. Mistrik, M. A. González Ballester, Universitat Pompeu Fabra, Barcelona (E) [10]

Feasibility of Nerve Proximity Detection using Tissue-Impedance Spectroscopy during Robotic Cochlear Implantation
Y. Jegge, H. Kalvoy, A. Sauter, C. Rathgeb, K. Gavaghan, M. Caversaccio, S. Weber, J. Anso, University of Bern, Bern (CH) [226]

Surface Matching based on External and Internal Anatomy of the Temporal Bone Applicable for Lateral Skull Base Surgery
D. Schneider, J. Hermann, K. Gerber, J. Anso, M. Caversaccio, S. Weber, L. Anschütz, ARTORG Center for Biomedical Engineering Research, Bern (CH) [229]

Quantitative evaluation of endoscopic sinus surgery using time series process analysis
S. Aoki, T. Sugino, A. Kuboki, N. Ohtori, R. Nakamura, Chiba University, Chiba (J) [111]

Determination of error sources and values for an individually mouldable surgical targeting system.
T. S. Rau, L. Uhlenbusch, S. Witte, J. Lexow, L. A. Kahrs, T. Lenarz, T. Ortmaier, O. Majdani, Hannover Medical School, Hannover (D) [148]

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ISCAS Surgical Workshop

Session Chairs: Kevin Cleary, PhD (USA), Titut Kühne, MD (D)

Presentations and Round Table

Saturday, June 23, 2018

Orthopaedics – 1

Session Chairs: Yoshihiro Muragaki, MD, PhD (J), Leo Joskowicz, PhD (IL)

Intraoperative cone-beam CT navigation for benign bone tumor surgery
T. van Steenbergen, I. van der Geest, D. Janssen, M. Rovers, J. Fütterer, Radboudumc, Nijmegen (NL) [216]

Computed analysis of the hindfoot alignment in 3D after a medializing calcaneal osteotomy using a pre- and post-operative weightbearing CT
M. Peiffer, A. Burssens, A. Barg, T. Leenders, S. Clockaerts, M. Richter, J. Victor, University Hospital of Ghent, Ghent (B) [93]

Computed Templating of Syndesmotic Ankle Lesions by use of 3D Analysis in Weightbearing and non-Weight bearing CT
A. Burssens, H. Vermue, A. Barg, F. Lintz, C. de Cesar Netto, J. Victor, K. Buedts, University Hospital of Ghent, Ghent (B) [97]

Tracking of spinal curvature using a hybrid navigation system and interpolation method
M. Kunz, B. Chan, A. Kashigar, R. E. Ellis, D. Borschneck, Queen's University, Kingston, Ontario (CDN) [211]

Orthopaedics – 2

An intraoperative fluoroscopic method to accurately measure pedicle screw position
R. Newell, H. Esfandiari, C. Anglin, R. Bernard, J. Street, A. J. Hodgson, University of British Columbia, Department of Mechanical Engineering (CA) [17-00482]

Accurate Wrist Immobilization for Percutaneous Scaphoid Navigation
R. Ellis, P. St John, M. Armstrong, R. W. Sellens, D. R. Pichora, Queen's University, Kingston, Ontario (CDN) [33]

Smart device based application for rod determination and angle measurement in minimally invasive spinal surgery
A. Alk, T. Martin, M. Daniol, J. Kozak, Aesculap AG, Tuttlingen (D) [163]

20th International Conference on Computer-Aided Diagnosis and Artificial Intelligence (CAD-AI)
Chairman: Hiroyuki Yoshida, PhD (USA)

Thursday, June 21, 2018

CAD-AI / ISCAS Joint Session on Deep Learning in CAD/CAS
Session Chairs: Hiroyuki Yoshida, PhD (USA), Pierre Jannin, PhD (F)

Deep learning in CAD: clinical perspective
Ulrich Bick, MD, Charité – Universitätsmedizin Berlin (D)

Ultrasound guided diagnosis and intervention: a deep learning approach
Purang Abolmaesumi, PhD, University of British Columbia, Vancouver, BC (CDN)

Best of both worlds: deep learning meets physical modeling in computational biophotonics
Lena Maier-Hein, PhD, Deutsches Krebsforschungszentrum, Heidelberg (D)

Deep learning at the interface of CAD/CAS
Kensaku Mori, PhD, Nagoya University (J)

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Deep Learning: 3D CNNs
Session Chairs: Kunio Doi, PhD (USA), Akinobu Shimizu, PhD (J)

Deep volumetric residual learning for differentiating colorectal masses from ileocecal valves in CT colonography
J. Näppi, T. Hironaka, H. Yoshida, Massachusetts General Hospital, Boston, MA (USA) [207]

Colon CAD with a 3D CNN approach
Z. Cao, O. Masoud, Vital Images, Minnetonka (USA) [202]

3D residual convolutional networks for computer-aided detection of polyps in CT colonography
T. Uemura, H. Lu, H. Kim, R. Tachibana, T. Hironaka, J. Näppi, H. Yoshida, Kyushu Institute of Technology, Kitakyushu-shi (J) [122]

Tumor detection for automated breast ultrasound using 3-D convolutional neural network
R. F. Chang, T. C. Chiang, Y. S. Huang, R. T. Chen, C. S. Huang, National Taiwan University, Taipei (RC) [16]

Segmentation of lung nodules on MDCT images by using 3D Conv-DeconvNet
S. Kidera, S. Kido, Y. Hirano, S. Mabu, N. Tanaka, Yamaguchi University, Ube (J) [69]

Polyp detection in colonoscopic videos by using spatio-temporal feature
H. Itoh, H. Roth, M. Misawa, Y. Mori, M. Oda, S. E. Kudo, K. Mori, Nagoya University, Nagoya (J) [120]

A preliminary study of the computerized detection of nodular liver lesion in Gd-EOB-DTPA-enhanced magnetic resonance images with 4D CNN
T. Takenaga, S. Hanaoka, Y. Nomura, T. Nakao, M. Nemoto, M. Murata, S. Miki, T. Yoshikawa, N. Hayashi, O. Abe, The University of Tokyo Hospital, Tokyo (J) [62]

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Deep Learning: 2D CNNs
Session Chair: Martin Fiebich, PhD (D), Ruey-Feng Chang, PhD (RC)

Plaque Classification in Coronary Arteries from IVOCT Images Using Convolutional Neural Networks and Transfer Learning
N. Gessert, M. Heyder, S. Latus, M. Lutz, A. Schlaefer, Hamburg University of Technology, Hamburg (D) [103]

Assessing Breast Cancer Screening using recent Deep Convolutional Neural Networks
X. Lessage, M. A. Larhmam, S. Mahmoudi, I. Nedjar, University of Mons, Mons (B) [121]

Evaluation of Early Esophageal Adenocarcinoma Detection Using Deep Learning
N. Ghatwary, X. Ye, M. Zolgharni, University of Lincoln, School of Computer Science (GB) [18-00014]

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Deep Learning: Fully Convolutional Networks

Session Chairs: Hiroshi Fujita, PhD (J), Janne Näppi, PhD (USA)

Interactive segmentation using real-time fine-tuning of a fully Convolutional Neural Network
M. Braginsky, L. Joskowicz, D. Link, D. Ben-Bashat, The Hebrew University of Jerusalem, Jerusalem (IL) [30]

Fully convolutional network for electronic cleansing in CT colonography
R. Tachibana, J. J. Näppi, H. Yoshida, National Institute of Technology, Yamaguchi (J)

Automated ganglion cell detection using fully convolutional networks and evaluation under different training losses
H. Oda, K. Chiba, H. R. Roth, T. Kitasaka, M. Oda, A. Hinoki, H. Uchida, K. Mori, Nagoya University, Nagoya (J) [24]

Preliminary development of training environment for deep learning on supercomputer system
Y. Nomura, I. Sato, T. Hanawa, S. Hanaoka, T. Nakao, T. Takenaga, D. Sato, T. Hoshino, Y. Sekiya, S. Ohshima, N. Hayashi, O. Abe, The University of Tokyo Hospital, Tokyo (J) [71]

Radiomics

Session Chairs: Mansoor Fatehi, MD (IR), Shoji Kido, MD, PhD (J)

Features selection analysis to quantify sacroiliitis in magnetic resonance imaging
M. Calil Faleiros, J. Raniery Ferreira Junior, A. Priscilla Magalhães Tenório, V. Faeda Dalto, R. Luppino Assad, M. Henrique Nogueira-Barbosa, P. Mazzoncini de Azevedo-Marques, Universidade de São Paulo, Ribeirão Preto (BR) [19]

Radiomics association of quantitative CT features with lung cancer patterns
J. Raniery Ferreira Junior, M. Koenigkam-Santos, A. Magalhães Tenório, M. Calil Faleiros, F. Garcia Cipriano, A. Todorovic Fabro, J. Näppi, H. Yoshida, P. Mazzoncini de Azevedo-Marques, University of Sao Paulo, São Carlos (BR) [58]

Deep-learning and radiomic features for survival prediction of patients with interstitial lung disease
R. Nasirudin, C. Watari, M. Matsuhiro, J. Nappi, T. Hironaka, N. Niki, H. Yoshida, Harvard Medical School, Boston, MA (USA) [159]

Quantitative Prediction Capability of 3D CADv with Pulmonary Nodule Component Evaluation for Malignancy and Postoperative Recurrence
Y. Ohno, A. Yaguchi, K. Aoyagi, S. Kaminaga, Y. Kishida, S. Seki, T. Yoshikawa, Kobe University, Graduate School of Medicine, Kobe (J) [4]

Robust extraction for low contrast liver tumors using modified adaptive likelihood estimation
G. Wang, Q. Huang, H. Ding, X. Wang, Tsinghua University, Dept. of Biomedical Engineering (CN) [18-00017]

24th Computed Maxillofacial Imaging Congress (CMI)
Chairman: Christos Angelopoulos, DDS (USA), Co-chair: Yoshihiko Hayakawa, PhD (J)

Friday, June 22, 2018

Image-Guided Oral Surgery and Orthodontics, Jaw Biodynamics
Session Chairs: Christos Angelopoulos, DDS (USA), Wael Aboelmaaty, PhD (ET)

Evaluation of Cone Beam Computed Tomography accuracy in surgical treatment plan of upper airway in OSA patients
W. Aboelmaaty, M. Isaac, M. Elewa, A. Elsobky, Mansoura University, Mansoura (ET) [227]

Accuracy improvement of facial soft tissue prediction following orthognathic surgery using geometrically-detailed FE mesh
D. Kim, T. Kuang, W. Xi, P. Yuan, S. G. F. Shen, X. Wang, M. F. Huang, J. Gateno, M. A. K. Liebschner, J. J. Xia, Houston Methodist Research Institute, Houston, TX (USA) [231]

An approach for 3D-visualization of bone metastases with focus on the craniofacial skeleton, applicable to CT and CBCT
C. Kober, P. Jürgens , H. F. Zeilhofer, B. I. Berg, Hamburg University of Applied Sciences, Hamburg (D) [222]

Pathological mandibular biomechanics: quantitative estimation of pathological fracture risk by finite element analysis
C. Kober, C. Hellmich , A. Gurin, V. Komlev, G. Kjeller, R. Sader, H. F. Zeilhofer, B. I. Berg, Hamburg University of Applied Sciences, Hamburg (D) [205]

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Computed Maxillofacial Image Analysis, Registration, Dose Optimization
Session Chairs: Kaan Orhan, DDS, PhD (TR), Adrienn Dobai, MD (H)

Importance of quantitative evaluation of jaw bones
A. Katsumata, H. Fujita, H. Hayashi, Asahi University, Gifu (J) [67]

Fiducial-based fusion of 3D dental models with magnetic resonance imaging
A. H. Abdi, A. G. Hannam, S. Fels, University of Britisch Columbia, Department of Electrical and Computer Engineering (CA) [18-00013]

Efficient 3D rigid Registration of large micro CT Images
P. Rösch, K. H. Kunzelmann, Augsburg University of Applied Sciences, Augsburg (D) [52]

Do ASIR and MBIR aid in dose optimization for dental implant imaging?
A. Al-Ekrish, A. Alabdulwahid, D. Tamimi, S. Alfadda, R. Al-Shawaf, R. Hörmann, W. Alfaleh, W. Puelacher, G. Widmann, King Saud University, Riyadh (SA) [100]

Tutorial on CMI - Collaborative works with information science and engineering in CMI
Session Chairs: Cornelia Kober, PhD (D), Silvio D. Bianchi, MD (I)

Friday, June 22, 2018

Computed Maxillofacial Image Guided Surgery and Implantology
Session Chairs: Asma'a Al-Ekrish, MDS (SA), Akitoshi Katsumata, DDS, PhD (J)

Robust Digital Dental Articulation for One-Piece Maxillary Orthognathic Surgery
J. Li, W. Xi, F. C. Afonso, P. Yuan, C. F. Yao, M. Huang, D. M. Alfi, J. Gateno, J. J. Xia, Houston Methodist Hospital, Houston Methodist Research Institute, Houston, TX (USA) [98]

Evaluation of surgical planning software for mandibular reconstruction using fibular free flap
S. Park, T. G. Son, H. Kim, H. Cho, J. W. Lee, Y. Kim, Korea Institute of Science and Technology, Seoul (ROK) [116]

The indication and application of computer-assisted navigation in oral and maxillofacial surgery
H. Yu, S. Shen, Shanghai Jiao Tong University School of Medicine, Shanghai (CHN) [17]

A Patient-specific Haptic Drilling Simulator Based on Virtual Reality for Dental Implant Surgery
X. Chen, P. Sun, D. Liao, Shanghai Jiao Tong University, School of Mechanical Engineering (CN) [18-00065]

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20th IFCARS / SPIE / ISCAS Joint Workshop on the Digital Operating Room (DOR)

Chairmen: Yoshihiro Muragaki, MD (J), Osman Ratib, MD (CH), Heinz U. Lemke, PhD (D)

A method for modeling and identification of surgical processes based on the clinical data of each patient in awake surgery for glioma
T. Nagai, I. Sato, K. Ohshima, Y. Fujino, H. Yamada, M. Tamura, Y. Muragaki, K. Masamune, Future University Hakodate, Hakodate (J) [105]

IEEE 11073 SDC and HL7 FHIR – Emerging Standards for Interoperability of Medical Systems
M. Kasparick, B. Andersen, H. Ulrich, S. Franke, E. Schreiber, M. Rockstroh, F. Golatowski, D. Timmermann, J. Ingenerf, T. Neumuth, University of Rostock, Institute of Applied Microelectronics and Computer Engineering, Rostock (D) [147]

The intelligent OR – Design and validation of a context-aware surgical working environment
S. Franke, M. Rockstroh, M. Hofer, T. Neumuth, University of Leipzig, Innovation Center Computer Assisted Surgery (ICCAS) (DE) [18-00033]

Sequential surgical signatures in micro-suturing task
A. Huaulmé, K. Harada, G. Forestier, M. Mitsuishi, P. Jannin, Université de Rennes 1, INSERM LTSI (FR) [18-00039]

Random Forest based surgical phase recognition in minimal invasive surgery
F. Meeuwsen, F. van Luyn, M. Blikkendaal, F. W. Jansen, J. van den Dobbelsteen, TU Delft, Delft (NL) [185]

From Passive Tool To Active Guidance – Requirements For Navigation Intelligence In Computer-Assisted Endoscopic ENT Surgery
R. Bieck, K. Heuermann, M. Hofer, T. Neumuth, Universität Leipzig Medizinische Fakultat, Leipzig (D) [209]

Development of a maturity model for supporting the digitalization in the perioperative area of hospitals
D. Junger, O. Burgert, Reutlingen University, Reutlingen (D) [219]

Battery-less power source of intelligent medical IoT instruments and devices
M. Daniol, L. Boehler, A. Keller, R. Sroka, Aesculap AG, Tuttlingen (D) [223]

Operating room integration using OPeLiNK technology
J. Okamoto, G. Mukumoto, H. Okuda, K. Masamune, I. Hiroshi, Y. Muragaki, Tokyo Women's Medical University, Tokyo (J) [255]

Strategies of multidisciplinary collaboration for development and implementation of computer-assisted technology in neurosurgery
A. Roethe, R. Lauer, P. Vajkoczy, T. Picht, Charité-Universitätsmedizin Berlin, Humboldt University Berlin, Berlin (D) [220]

CatNet: Cataract surgery phase recognition network
Evangello Flouty, Odysseas Zisimopoulos, Petros Giataganas, Andre Chow, Jean Nehme, Danail Stoyanov, Digital Surgery, Kinosis, Ltd, London, UK (UK)

Friday, June 22, 2018

3rd ISCAS / CAD / IFCARS Joint Symposium on Multidisciplinary Computational Anatomy (MCA)

Chairs: Makato Hashizume, MD (J), Hiroyuki Yoshida, PhD (USA), Heinz U. Lemke, PhD (D)

2D Geometric Hip Stability in the Osteoarthritis Initiative Dataset
R. Ellis, C. DesRoche, B. Jiang, J. Rudan, Queen's University, Kingston, Ontario (CDN) [53]

Biomechanical simulation of respiratory system for lung cancer surgery
F. Jiang, X. Chen, K. Ueda, J. Ohgi, Yamaguchi University, Yamaguchi, Ube (J) [27]

Unsupervised deep learning based registration for aligning micro CT and histology images
K. Nagara, S. Nakamura, H. Roth, M. Oda, K. Mori, Nagoya University, Nagoya (J) [241]

Mathematical computation of elasticity in breast phantoms for deformation tracking
V. Groenhuis, F. Visentin, F. J. Siepel, B. M. Maris, D. Dall'Alba, P. Fiorini, S. Stramigioli, University of Twente, Department of Robotics and Mechatronics (NL) [18-00053]

Semi-automatic neck curve reconstruction for intracranial aneurysm rupture risk assessment based on morphological parameters
S. Saalfeld, P. Berg, A. Niemann, M. Luz, B. Preim, O. Beuing, Otto-von-Guericke-Universität Magdeburg, Fakultät für Informatik (DE) [18-00049]

Development and internal validation **of an aneurysm rupture probability model based on patient characteristics and aneurysm location, morphology, and hemodynamics**
F. J. Detmer, B. J. Chung, F. Mut, M. Slawski, F. Hamzei-Sichani, C. M. Putman, C. M. Jimenez, J. R. Cebral, George Mason University, Volgenau School of Engineering, Department of Bioengineering (US) [18-00035]

Modeling Craniosynostosis Severity and Deformity Progression in Infants using Hidden Markov Models
S. Karani, R. Goldman, J. Phillips,D.Y. Khechoyan, Children's Hospital of Colorado, Aurora,CO (USA)

CAR / CARS Poster Session

Session Chairs: Yoshinobu Sato, PhD (J), NN

Fast imaging combined with joint-transmitting-receiving beamforming based on a ring array
Y. Wang, X. Jiang, Y. Xiao, W. Guo, J. Yu, H. Zheng, Fudan University, Department of Electronic Engineering (CN) [18-00026]

Real-time Dual-Modal Vein Imaging System
Y. Liu, C. Mela, D. P. Lemmer, F. S. Bao, F. Papay, T. Hicks, The University of Akron, Dept. of Biomedical Engineering (US) [18-00008]

Automatic 2D segmentation of an intracardiac catheter based on MSER blob detector and eccentricity
V. V. Danilov, I. P. Skirnevsky, O. M. Gerget, R. A. Manakov, N. V. Vasilyev, Tomsk Polytechnic University, Medical Devices Design Laboratory (RU) [18-00011]

Highly flexible interventional image guidance system based on miniaturized X-ray tubes (FlexScan)
A. Boese, S. Lagotzki, M. U. Iftikhar, M. H. Friebe, Otto-von-Guericke-University, Medical Engineering (DE) [18-00012]

Quantitative analysis of segmented colon in CT Colonography using geometrical features
M. KN, PC. Siddalingaswamy, GK, Prabhu, Manipal Institute of Technology Department of Biomedical Engineering (IN) [18-00076]

Development of automatic measurement of callosal angle on coronal image in head CT
N. Takahashi, T. Kinoshita, T. Ohmura, E. Matsuyama, H. Toyoshima, Research Institute for Brain and Blood Vessels, Akita (J) [3]

Residual network–based unsupervised temporal image subtraction for highlighting bone metastases
S. Hanaoka, T. Masumoto, S. Hoshiai, Y. Nomura, T. Takenaga, M. Murata, S. Miki, T. Yoshikawa, N. Hayashi, O. Abe, The University of Tokyo Hospital, Tokyo (J) [11]

Visualizing CT 3D model section with USG image plane for hepatic applications
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Eye structure segmentation on micro-CT images using 3D fully convolutional network with sparsely-annotated training data
T. Sugino, H. Roth, M. Oda, S. Omata, S. Sakuma, F. Arai, K. Mori, Nagoya University, Nagoya (J) [25]

Water-hammer effects after aortic valve replacement with a mechanical valve in aortic regurgitation: wave intensity analysis
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S. H. Chae, J. W. Jeong, J. H. Choi, E. Y. Chae, H. H. Kim, Y. W. Choi, S. Lee, ETRI – Electronics & Telecommunications Research Institute, Daejeon (ROK) [115]

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Deep learning based segmentation of organs of the female pelvis in CBCT scans for adaptive radiotherapy using CT and CBCT data
A. Haensch, V. Dicken, T. Gass, T. Morgas, J. Klein, H. Meine, H. K. Hahn, Fraunhofer MEVIS, Bremen (D) [133]

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B. Zhao, C. A. Nelson, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences (CN) [17-00472]

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Y. C. Chen, D. R. Chen, H. K. Wu, Y. L. Huang, Tunghai University, Taichung (RC) [20]

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J. G. Cabal Aragon, D. Lindner, S. Arnold, A. Schmitgen, C. Chalopin, Universität Leipzig, Leipzig (D) [80]

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T. Leblanc, V. Durrmann, M. Colleaux, F. Lalys, Therenva SAS, Rennes (F) [85]

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M. AL-Maatoq , C. H. Chen, A. Boese, M. Friebe, Intelligente Katheter, Otto von Guericke University, Magdeburg (D) [87]

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S. Pairojboriboon, T. Punyaratabhandhu, P. Liacouras, Phramongkutklao College of Medicine, Bangkok (T) [90]

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S. G. Ryan, G. Venne, J. F. Rudan, R. E. Ellis, Queen's University, Kingston, Ontario (CDN) [91]

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A preliminary study on disease annotation from unstructured electronic medical records using recurrent neural network
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A. A. Farag, S. A. Elshazly, A. Dachman, P. Pickhardt, A. Seow, R. Falk, G. Dryden, A. A. Farag, The University of Louisville, Kentucky Imaging Technologies (US) [18-00058]

Efficient Multi-Organ Segmentation of the Head and Neck area using Hierarchical Neural Networks
E. Tappeiner, S. Pröll, M. Hönig, P. F. Raudaschl, P. Zaffino, M. F. Spadea, G. C. Sharp, R. Schubert, K. Fritscher, UMIT – Private University for Health Sciences, Medical Informatics and Technology GmbH, Institute for Biomedical Image Analysis (AT) [18-00032]

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Session Chairs: Makoto Hashizume, MD (J), Kevin Cleary, PhD (USA), Leo Joskowicz, PhD (IL), Purang Abolmaesumi, PhD (CDN), Terry M. Peters, PhD (CDN), Kensaku Mori, PhD (J)

Locally operated unilateral master-slave control system with portable device and forceps manipulator for laparoscopic surgery
S. Fukui, H. Kobayashi, T. Kawai, Y. Nishizawa, A. Nishikawa, N. Iwamoto, Y. Horise, K. Masamune, Osaka Institute of Technology, Osaka (J) [12]

Sacral alar iliac (SAI) Screws insertion through 1st and 2nd dorsal sacral foramen and implications for clinical application
G. H. Jung, Y. S. Park, Gyeongsang National University, Busan, Changwon-si (ROK) [35]

Personalized medicine: technological bridge between patient and surgeon by 3D printed surgical guide in rhinoplasty.
H. Herrero Antón de Vez, J. Herrero Jover, R. Comas, Centro Médico Teknon, Barcelona (E) [36]

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K. Hassan, J. Lui, J. Dort, S. Chan, University of Calgary, Calgary (CDN) [51]

A novel intra-abdominal retraction device with extra- magnetic manipulator for laparoscopic surgery
Y. H. Jeon, S. W. Cho, S. C. Yun, K. Y. Lee, S. J. Park, C. J. Kim, M. G. Lee, Ajou University, Suwon-si (ROK) [57]

Direct design of an individual bone implant on patient-specific CT data in CAx systems
D. Hofmann, P. Sembdner, S. Holtzhausen, R. Stelzer, Dresden University of Technology, Dresden (D) [79]

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G. Caiti, J. Dobbe, E. Bervoets, M. Beerens, S. Strackee, G. Strijkers, G. Streekstra, AMC, Amsterdam (NL) [88]

Quantitative evaluation of laparoscopic intestinal suturing by forceps motion analysis from 305 training videos
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T. Koguchi, A. Hanafusa, F. Shimizu, K. Masamune, Y. Muragaki, H. Iseki, Shibaura Institute of Technology, Graduate School of Engineering and Science, Saitama (J) [135]

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S. Siyar, H. Azarnoush, S. Rashidi, A. Winkler-Schwartz, R. F. Del Maestro, Amirkabir University of Technology (Tehran Polytechnic), Tehran (IR) [149]

Preliminary Application of Ultrasound And CT Image Fusion Based On Optical Positioning Registration In Craniomaxillofacial Soft Tissue Surgery
C. Yang, J. Wu, Y. Zhang, B. Xu, S. G. Shen, S. Zhang, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai (CHN) [177]

Towards a complete simulator of Twin-to-Twin fetal surgery: performance of a cost-effective tracking system.
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H. Dehghani, L. Simms, S. Zhang, P. Kulkarni, M. Ortiz, P. Biswas, S.-E. Song, University of Central Florida, Department of Mechanical and Aerospace Engineeing (US) [18-00054]

Augmented Reality: Principles, General Workflow, and Initial Assessment of Pre-operative Cancer Models for use in Prostate Cancer Surgery
N. Wake, A. B. Rosenkrantz, W. C. Huang, S. S. Taneja, J. S. Wysock, R. Huang, D. K. Sodickson, H. Chandarana, NYU Langone Health, NYU School of Medicine, Department of Radiology (US) [18-00060]

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J. Luo, I. P. Machado, M. Zhang, S. Frisken, S. Pieper, P. Golland, M. Toews, P. Unadkat, A. Sedghi, H. Zhou, W. M. Wells III, Harvard Medical School, Department of Radiology (US) [18-00061]

TTRE and FRE are uncorrelated in a paired-point rigid registration
Z. Min, M. Q.-H. Meng, Chinese University of Hong Kong, Department of Electronic Engineering (CN) [18-00064]

An Oral and Maxillofacial Navigation System with Automatic Identification of Fiducial Points
X. Chen, C. Qin, Z. Cao, S. Fan, Y. Wu, Shanghai Jiao Tong University, School of Mechanical Engineering (CN) [18-00037]

A surgical planning platform for robotic needle-based neurosurgical interventions
S. Chauhan, R. De Mel, T. Williamson, J. Rosenfeld, Nanyang Technological University, School of Mechanical and Aerospace (SG) [18-00027]

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Session Chairs: Paulo Mazzonicini Azevedo-Marques, PhD (BR), Martin Fiebich, PhD (D)

Undertrust in CAD breast DCE-MRI: an in-depth qualitive study on diagnosing behaviour and trust.
M. Dorrius, K. van Prooijen, F. Cnossen, University Medical Center Groningen, Groningen (NL) [144]

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K. Abe, H. Takeo, Y. NAGAI, Y. Kuroki, S. Nawano, Kanagawa Institute of Technology, Atsugi, Kanagawa (J) [2]

Automatic differentiation cystic and solid breast lesions at ultrasonic images
I. Egoshin, D. Pasynkov, A. Kolchev, I. Kliouchkin, O. Pasynkova, Mari State University, Yoshkar-Ola (RUS) [34]

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Radiomics association of MRI texture features with spondyloarthritis and sacroiliitis
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Recognition algorithm of anatomical skeleton in a bone scintigram
T. Kanamori, A. Saito, S. Hanaoka, S. Higashiyama, J. Kawabe, S. Shiomi, A. Shimizu, Tokyo University of Agriculture and Technology, Koganei-shi (J) [109]

Detection of bone metastasis in a scintigram using U-Net
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Artificial intelligence aided detection and diagnosis of ground-glass opacity nodules
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Peripheral Bronchial Identification on Chest CT using Unsupervised Machine Learning
D. A. Moses, L. Dawes, C. Sammut, T. Zrimec, University of South Wales, Prince of Wales Hospital (AU) [18-00072]

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Session Chairs: Yoshihiko Hayakawa, PhD (J), Christos Angelopoulos, DDS (USA)

The use of a custom made atlas as a template for corrective surgeries of asymmetric patients: Proof of principle and a multi-center end user survey
A. Al-Hadidi, B. Paniagua, R. Cook, D. Tyndall, Z. Baqain, L.H.S. Cevidanes, University of Jordan School of Dentistry, Oral surgery, Oral medicine, and periodontology (JO) [18-00001]

Registration of Histopathology and Micro-CT Slices for Quantifying Periapical lesions in a Rat Model
K. Orhan, U. Aksoy, G. Savtekin, A. î Şehir, H. Ozkayalar, Ankara University, Faculty of Dentistry, Ankara (TR) [32]

The Addition of 3D Segmented Virtual Models in the Diagnosis of Temporomandibular Joint Disorders
H. Kohltfarber, A. Al-Hadidi, F. Festy, D. Tyndall, Loma Linda University School of Dentistry, Loma Linda (USA) [61]

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B. Bilecenoglu, K. Orhan, B. U. Sakul, Ankara University, Faculty of Dentistry, Ankara (TR) [72]

Collision detection from force/torque information using a neural network
S. Y. Woo, S. J. Lee, J. Y. Yoo, W. J. Yi, Seoul National University, Seoul (ROK) [104]

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K. Mizukami, T. Koyama, Y. Araseki , Y. Komaki, Y. Hayakawa, Kitami Institute of Technology, Kitami (J) [114]

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Landmark based midsagittal plane analyzing in patients with facial symmetry and asymmetry
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P. Sun, X. Chen, R. Yang, T. Ji, Shanghai Jiao Tong University, Shanghai (CHN) [203]