Contents

Computer Assisted Interventions

A Novel Computer-Aided Surgical Simulation (CASS) System to Streamline Orthognathic Surgical Planning ................................. 3
   Peng Yuan, Dennis Chun-Yu Ho, Chien-Ming Chang, Jianfu Li, Huaming Mai, Daeseung Kim, Shunyao Shen, Xiaoyan Zhang, Xiaobo Zhou, Zixiang Xiong, Jaime Gateno, and James J. Xia

Computer Assisted Planning, Simulation and Navigation of Periacetabular Osteotomy ................................................................. 15
   Li Liu, Timo M. Ecker, Klaus-A. Siebenrock, and Guoyan Zheng

FEM Simulation with Realistic Sliding Effect to Improve Facial-Soft-Tissue-Change Prediction Accuracy for Orthognathic Surgery ...... 27
   Daeseung Kim, Huaming Mai, Chien-Ming Chang, Dennis Chun-Yu Ho, Xiaoyan Zhang, Shunyao Shen, Peng Yuan, Guangming Zhang, Jaime Gateno, Xiaobo Zhou, Michael A.K. Liebschner, and James J. Xia

CathNets: Detection and Single-View Depth Prediction of Catheter Electrodes .................................................................................... 38
   Christoph Baur, Shadi Albarqouni, Stefanie Demirci, Nassir Navab, and Pascal Fallavollita

Inference of Tissue Haemoglobin Concentration from Stereo RGB .......................................................... 50
   Geoffrey Jones, Neil T. Clancy, Simon Arridge, Daniel S. Elson, and Danail Stoyanov

Radiation-Free 3D Navigation and Vascular Reconstruction for Aortic Stent Graft Deployment ........................................................ 59
   Fang Chen, Jia Liu, and Hongen Liao

Electromagnetic Guided In-Situ Laser Fenestration of Endovascular Stent-Graft: Endovascular Tools Sensorization Strategy and Preliminary Laser Testing ......................................................... 72
   Sara Condino, Roberta Piazza, Filippo Micheletti, Francesca Rossi, Roberto Pini, Raffaella Berchiolli, Aldo Alberti, Vincenzo Ferrari, and Mauro Ferrari

A Cost-Effective Navigation System for Peri-acetabular Osteotomy Surgery .......................................................... 84
   Silvio Pflugi, Rakesh Vasireddy, Li Liu, Timo M. Ecker, Till Lerch, Klaus Siebenrock, and Guoyan Zheng
Motion-Based Technical Skills Assessment in Transoesophageal Echocardiography

Evangelos B. Mazomenos, Francisco Vasconcelos, Jeremy Smelt, Henry Prescott, Marjan Jahangiri, Bruce Martin, Andrew Smith, Susan Wright, and Danail Stoyanov

Advanced Design System for Infantile Cranium Shape Model Growth Prediction

Kamal Shahim, Mauricio Reyes, Ruben Simon, Philipp Jürgens, and Christoph Blecher

Augmented Reality and Virtual Reality

Interactive Mixed Reality for Muscle Structure and Function Learning

Meng Ma, Philipp Jutzi, Felix Bork, Ina Seelbach, Anna Maria von der Heide, Nassir Navab, and Pascal Fallavolita

Visualization Techniques for Augmented Reality in Endoscopic Surgery

Rong Wang, Zheng Geng, Zhaoxing Zhang, and Renjing Pei

Augmented Reality Imaging for Robot-Assisted Partial Nephrectomy Surgery

Philip Edgcumbe, Rohit Singla, Philip Pratt, Caitlin Schneider, Christopher Nguan, and Robert Rohling

Mobile Laserprojection in Computer Assisted Neurosurgery

Christoph Hennersperger, Johannes Manus, and Nassir Navab

Towards Augmented Reality Guided Craniotomy Planning in Tumour Resections

Marta Kersten-Oertel, Ian J. Gerard, Simon Drouin, Kevin Petrecca, Jeffery A. Hall, and D. Louis Collins

Augmenting Scintigraphy Images with Pinhole Aligned Endoscopic Cameras: A Feasibility Study

Peter A. von Niederhäusern, Ole C. Maas, Michael Rissi, Matthias Schneebeli, Stephan Haerle, and Philippe C. Cattin

Tactile Augmented Reality for Arteries Palpation in Open Surgery Training

Sara Condino, Rosanna Maria Viglialoro, Simone Fani, Matteo Bianchi, Luca Morelli, Mauro Ferrari, Antonio Bicchi, and Vincenzo Ferrari

Augmented Reality Guidance with Electromagnetic Tracking for Transpyloric Tube Insertion

Jordan Bano, Tomohiko Akahoshi, Ryu Nakadate, Byunghyun Cho, and Makoto Hashizume
Exploring Visuo-Haptic Augmented Reality User Interfaces for Stereotactic Neurosurgery Planning ........................................... 208
   Ulrich Eck, Philipp Stefan, Hamid Laga, Christian Sandor,
   Pascal Fallavollita, and Nassir Navab

Interactive Depth of Focus for Improved Depth Perception ................. 221
   Megha Kalia, Christian Schulte zu Berge, Hessam Roodaki,
   Chandan Chakraborty, and Nassir Navab

Augmented Reality for Neurosurgical Guidance: An Objective Comparison
   of Planning Interface Modalities ............................................. 233
   Ryan Armstrong, Trinette Wright, Sandrine de Ribaupierre,
   and Roy Eagleson

Medical Image Analysis

Adaptive Mean Shift Based Hemodynamic Brain Parcellation in fMRI ....... 247
   Mohanad Albughdadi, Lotfi Chaari, and Jean-Yves Tourneret

Quantitative Analysis of 3D T1-Weighted Gadolinium (Gd) DCE-MRI
   with Different Repetition Times .............................................. 259
   Elijah D. Rockers, Maria B. Pascual, Sahil Bajaj, Joseph C. Masdeu,
   and Zhong Xue

Cascade Registration of Micro CT Volumes Taken in Multiple Resolutions... 269
   Kai Nagara, Hirohisa Oda, Shota Nakamura, Masahiro Oda,
   Hirotoshi Homma, Hirotsugu Takabatake, Masaki Mori, Hiroshi Natori,
   Daniel Rueckert, and Kensaku Mori

3D Vessel Segmentation Using Random Walker with Oriented Flux
   Analysis and Direction Coherence .......................................... 281
   Qing Zhang and Albert C.S. Chung

Registration of CT and Ultrasound Images of the Spine with Neural
   Network and Orientation Code Mutual Information ...................... 292
   Fang Chen, Dan Wu, and Hongen Liao

A New Statistical Image Analysis Approach and Its Application
   to Hippocampal Morphometry .................................................. 302
   Mark Inlow, Shan Cong, Shannon L. Risacher, John West,
   Maher Rizkalla, Paul Salama, Andrew J. Saykin,
   and Li Shen for the ADNI
Clustering of MRI Radiomics Features for Glioblastoma Multiforme: An Initial Study ................................................................. 311
   Zhi-Cheng Li, Qi-Hua Li, Bo-Lin Song, Yin-Sheng Chen,
   Qiu-Chang Sun, Yao-Qin Xie, and Lei Wang

A Multi-resolution Multi-model Method for Coronary Centerline Extraction
Based on Minimal Path ............................................................ 320
   Dengqiang Jia, Wenzhe Shi, Daniel Rueckert, Liu Liu,
   Sebastien Ourselin, and Xiahai Zhuang

Facial Behaviour Analysis in Parkinson’s Disease .......................... 329
   Riyadh Almutiry, Samuel Couth, Ellen Poliakoff, Sonja Kotz,
   Monty Silverdale, and Tim Cootes

Medical Image Computing

Weighted Robust PCA for Statistical Shape Modeling ....................... 343
   Jingting Ma, Feng Lin, Jonas Honsdorf, Katharina Lentzen,
   Stefan Wesarg, and Marius Erdt

Intra-Operative Modeling of the Left Atrium: A Simulation Approach
Using Poisson Surface Reconstruction ....................................... 354
   Rafael Palomar, Faouzi A. Cheikh, Azeddine Beghdadi, and Ole J. Elle

Atlas-Based Reconstruction of 3D Volumes of a Lower Extremity from
2D Calibrated X-ray Images .................................................... 366
   Weimin Yu and Guoyan Zheng

3D Fully Convolutional Networks for Intervertebral Disc Localization
and Segmentation ................................................................. 375
   Hao Chen, Qi Dou, Xi Wang, Jing Qin, Jack C.Y. Cheng,
   and Pheng-Ann Heng

Temporal Prediction of Respiratory Motion Using a Trained Ensemble
of Forecasting Methods .......................................................... 383
   Xiaoran Chen, Christine Tanner, Orçun Göksel, Gábor Székely,
   and Valeria De Luca

Automatic Fast-Registration Surgical Navigation System Using Depth
Camera and Integral Videography 3D Image Overlay ....................... 392
   Cong Ma, Guowen Chen, and Hongen Liao

Patient-Specific 3D Reconstruction of a Complete Lower Extremity
from 2D X-rays ................................................................. 404
   Guoyan Zheng, Steffen Schumann, Alper Alcoltekin, Bramislav Jaramaz,
   and Lutz-P. Nolte
Cross-Manifold Guidance in Deformable Registration of Brain MR Images...... 415
   Jinpeng Zhang, Qian Wang, Guorong Wu, and Dinggang Shen

Eidolon: Visualization and Computational Framework for Multi-modal Biomedical Data Analysis ................................................................. 425
   Eric Kerfoot, Lauren Fovargue, Simone Rivolo, Wenzhe Shi,
   Daniel Rueckert, David Nordsletten, Jack Lee, Radomir Chabiniok,
   and Reza Razavi

Erratum to: Medical Imaging and Augmented Realitys................................ E1
   Guoyan Zheng, Hongen Liao, Pierre Jannin, Philippe Cattin,
   and Su-Lin Lee

Author Index ...................................................................................................... 439
Medical Imaging and Augmented Reality
7th International Conference, MIAR 2016, Bern, Switzerland, August 24-26, 2016, Proceedings
Zheng, G.; Liao, H.; Jannin, P.; Cattin, P.; Lee, S.-L. (Eds.)
2016, XVII, 441 p. 202 illus., Softcover
ISBN: 978-3-319-43774-3