

Table of Contents

Registration

Real-Time 2D/3D Deformable Registration Using Metric Learning	1
<i>Chen-Rui Chou and Stephen Pizer</i>	
Groupwise Spectral Log-Demons Framework for Atlas Construction	11
<i>Herve Lombaert, Leo Grady, Xavier Pennec, Jean-Marc Peyrat, Nicholas Ayache, and Farida Cheriet</i>	
Robust Anatomical Correspondence Detection by Graph Matching with Sparsity Constraint	20
<i>Yanrong Guo, Guorong Wu, Yakang Dai, Jianguo Jiang, and Dinggang Shen</i>	

Segmentation

Semi-supervised Segmentation Using Multiple Segmentation Hypotheses from a Single Atlas	29
<i>Tobias Gass, Gábor Székely and Orcun Goksel</i>	
Carotid Artery Wall Segmentation by Coupled Surface Graph Cuts	38
<i>Andres Arias, Jens Petersen, Arna van Engelen, Hui Tang, Mariana Selwaness, Jacqueline C.M. Witteman, Aad van der Lugt, Wiro Niessen, and Marleen de Bruijne</i>	
Graph Cut Segmentation Using a Constrained Statistical Model with Non-linear and Sparse Shape Optimization	48
<i>Tahir Majeed, Ketut Fundana, Silja Kiriyanthan, Jörg Beinemann, and Philippe Cattin</i>	
Novel Context Rich <i>LoCo</i> and <i>GloCo</i> Features with Local and Global Shape Constraints for Segmentation of 3D Echocardiograms with Random Forests	59
<i>Kiryl Chykeyuk, Mohammad Yaqub, and J. Alison Noble</i>	
Novel Vector-Valued Approach to Automatic Brain Tissue Classification	70
<i>Nataliya Portman and Alan Evans</i>	
Atlas-Based Whole-Body PET-CT Segmentation Using a Passive Contour Distance	82
<i>Fabian Gigengack, Lars Ruthotto, Xiaoyi Jiang, Jan Modersitzki, Martin Burger, Sven Hermann, and Klaus P. Schäfers</i>	

Spatially Aware Patch-Based Segmentation (SAPS): An Alternative Patch-Based Segmentation Framework	93
<i>Zehan Wang, Robin Wolz, Tong Tong, and Daniel Rueckert</i>	
Efficient Geometrical Potential Force Computation for Deformable Model Segmentation	104
<i>Igor Sazonov, Xianghua Xie, and Perumal Nithiarasu</i>	
Shape Prior Model for Media-Adventitia Border Segmentation in IVUS Using Graph Cut	114
<i>Ehab Essa, Xianghua Xie, Igor Sazonov, Perumal Nithiarasu, and Dave Smith</i>	
Multiple Atlases-Based Joint Labeling of Human Cortical Sulcal Curves	124
<i>Ilwoo Lyu, Gang Li, Minjeong Kim, and Dinggang Shen</i>	
Detection, Localization, Tracking	
Fast Anatomical Structure Localization Using Top-Down Image Patch Regression	133
<i>René Donner, Bjoern H. Menze, Horst Bischof, and Georg Langs</i>	
Oblique Random Forests for 3-D Vessel Detection Using Steerable Filters and Orthogonal Subspace Filtering	142
<i>Matthias Schneider, Sven Hirsch, Gábor Székely, Bruno Weber, and Bjoern H. Menze</i>	
Pipeline for Tracking Neural Progenitor Cells	155
<i>Jacob S. Vestergaard, Anders L. Dahl, Peter Holm, and Rasmus Larsen</i>	
Automatic Heart Isolation in 3D CT Images	165
<i>Hua Zhong, Yefeng Zheng, Gareth Funka-Lea, and Fernando Vega-Higuera</i>	
Randomness and Sparsity Induced Codebook Learning with Application to Cancer Image Classification	181
<i>Quannan Li, Cong Yao, Liwei Wang, and Zhuowen Tu</i>	
Context Enhanced Graphical Model for Object Localization in Medical Images	194
<i>Yang Song, Weidong Cai, Heng Huang, Yue Wang, and David Dagan Feng</i>	
A Cascade Learning Method for Liver Lesion Detection in CT Images	206
<i>Dijia Wu, David Liu, Michael Suehling, Kevin S. Zhou, and Christian Tietjen</i>	

Automatic Event Detection within Thrombus Formation Based on Integer Programming	215
<i>Loïc Peter, Olivier Pauly, Sjoert B.G. Jansen, Peter A. Smethurst, Willem H. Ouwehand, and Nassir Navab</i>	
Automatic Extraction of the Curved Midsagittal Brain Surface on MR Images	225
<i>Hugo J. Kuijff, Max A. Viergever, and Koen L. Vincken</i>	
Identification of Malignant Breast Tumors Based on Acoustic Attenuation Mapping of Conventional Ultrasound Images	233
<i>Sivan Harary and Eugene Walach</i>	
What Genes Tell about Iris Appearance	244
<i>Stine Harder, Susanne R. Christoffersen, Peter Johansen, Claus Børsting, Niels Morling, Jeppe D. Andersen, Anders L. Dahl, and Rasmus R. Paulsen</i>	
3D Reconstruction	
Robust Dense Endoscopic Stereo Reconstruction for Minimally Invasive Surgery	254
<i>Sylvain Bernhardt, Julien Abi-Nahed, and Rafeef Abugharbieh</i>	
Model-Based Human Teeth Shape Recovery from a Single Optical Image with Unknown Illumination	263
<i>Aly Farag, Shireen Elhabian, Aly Abdelrehim, Wael Aboelmaaty, Allan Farman, and David Tasman</i>	
Biophysical Model Personalization	
Brain Tumor Cell Density Estimation from Multi-modal MR Images Based on a Synthetic Tumor Growth Model	273
<i>Ezequiel Geremia, Bjoern H. Menze, Marcel Prastawa, M.-A. Weber, Antonio Criminisi, and Nicholas Ayache</i>	
Current-Based 4D Shape Analysis for the Mechanical Personalization of Heart Models	283
<i>Loïc Le Folgoc, Hervé Delingette, Antonio Criminisi, and Nicholas Ayache</i>	
Author Index	293