

M. Jorge Cardoso · Tal Arbel et al. (Eds.)

# Molecular Imaging, Reconstruction and Analysis of Moving Body Organs, and Stroke Imaging and Treatment

Fifth International Workshop, CMMI 2017  
Second International Workshop, RAMBO 2017  
and First International Workshop, SWITCH 2017  
Held in Conjunction with MICCAI 2017  
Québec City, QC, Canada, September 14, 2017  
Proceedings

# Contents

<b>Fifth International Workshop on Computational Methods for Molecular Imaging, CMMI 2017</b>	
3D Lymphoma Segmentation in PET/CT Images Based on Fully Connected CRFs . . . . .	3
<i>Yuntao Yu, Pierre Decazes, Isabelle Gardin, Pierre Vera, and Su Ruan</i>	
Individual Analysis of Molecular Brain Imaging Data Through Automatic Identification of Abnormality Patterns . . . . .	13
<i>Ninon Burgos, Jorge Samper-González, Anne Bertrand,         Marie-Odile Habert, Sébastien Ourselin, Stanley Durrleman,         M. Jorge Cardoso, and Olivier Colliot</i>	
W-Net for Whole-Body Bone Lesion Detection on $^{68}\text{Ga}$ -Pentixafor PET/CT Imaging of Multiple Myeloma Patients . . . . .	23
<i>Lina Xu, Giles Tetteh, Mona Mustafa, Jana Lipkova, Yu Zhao,         Marie Bieth, Patrick Christ, Marie Piraud, Bjoern Menze,         and Kuangyu Shi</i>	
3D Alpha Matting Based Co-segmentation of Tumors on PET-CT Images . . .	31
<i>Zisha Zhong, Yusung Kim, John Buatti, and Xiaodong Wu</i>	
Synthesis of Positron Emission Tomography (PET) Images via Multi-channel Generative Adversarial Networks (GANs). . . . .	43
<i>Lei Bi, Jinman Kim, Ashnil Kumar, Dagan Feng, and Michael Fulham</i>	
<b>Second International Workshop on Reconstruction and Analysis of Moving Body Organs, RAMBO 2017</b>	
Dynamic Respiratory Motion Estimation Using Patch-Based Kernel-PCA Priors for Lung Cancer Radiotherapy . . . . .	55
<i>Tiancheng He, Ramiro Pino, Bin Teh, Stephen Wong, and Zhong Xue</i>	
Mass Transportation for Deformable Image Registration with Application to Lung CT . . . . .	66
<i>Bartłomiej W. Papież, Sir Michael Brady, and Julia A. Schnabel</i>	
Motion-Robust Spatially Constrained Parameter Estimation in Renal Diffusion-Weighted MRI by 3D Motion Tracking and Correction of Sequential Slices . . . . .	75
<i>Sila Kurugol, Bahram Marami, Onur Afacan, Simon K. Warfield,         and Ali Gholipour</i>	

Semi-automatic Cardiac and Respiratory Gated MRI for Cardiac Assessment During Exercise . . . . .	86
<i>Bram Ruijsink, Esther Puyol-Antón, Muhammad Usman, Joshua van Amerom, Phuoc Duong, Mari Nieves Velasco Forte, Kuberan Pushparajah, Alessandra Frigoli, David A. Nordsletten, Andrew P. King, and Reza Razavi</i>	
CoronARE: A Coronary Artery Reconstruction Challenge . . . . .	96
<i>Serkan Çimen, Mathias Unberath, Alejandro Frangi, and Andreas Maier</i>	
Freehand Ultrasound Image Simulation with Spatially-Conditioned Generative Adversarial Networks . . . . .	105
<i>Yipeng Hu, Eli Gibson, Li-Lin Lee, Weidi Xie, Dean C. Barratt, Tom Vercauteren, and J. Alison Noble</i>	
Context-Sensitive Super-Resolution for Fast Fetal Magnetic Resonance Imaging . . . . .	116
<i>Steven McDonagh, Benjamin Hou, Amir Alansary, Ozan Oktay, Konstantinos Kamnitsas, Mary Rutherford, Jo V. Hajnal, and Bernhard Kainz</i>	
Reconstruction of 3D Cardiac MR Images from 2D Slices Using Directional Total Variation . . . . .	127
<i>Nicolas Basty, Darryl McClymont, Irvin Teh, Jürgen E. Schneider, and Vicente Grau</i>	
An Efficient Multi-resolution Reconstruction Scheme with Motion Compensation for 5D Free-Breathing Whole-Heart MRI . . . . .	136
<i>Rosa-Maria Menchón-Lara, Javier Royuela-del-Val, Alejandro Godino-Moya, Lucilio Cordero-Grande, Federico Simmross-Wattenberg, Marcos Martín-Fernández, and Carlos Alberola-López</i>	
<b>First International Stroke Workshop on Imaging and Treatment Challenges, SWITCH 2017</b>	
Automated Ventricular System Segmentation in CT Images of Deformed Brains Due to Ischemic and Subarachnoid Hemorrhagic Stroke . . . . .	149
<i>E. Ferdinand, A.M. Boers, L.F. Been, B.M. Cornelissen, I.G. Jansen, K.M. Treurniet, J. Borst, C.B. Majoie, and H.A. Marquering</i>	
Towards Automatic Collateral Circulation Score Evaluation in Ischemic Stroke Using Image Decompositions and Support Vector Machines . . . . .	158
<i>Yiming Xiao, Ali Alamer, Vladimir Fonov, Benjamin W.Y. Lo, Donatella Tampieri, D. Louis Collins, Hassan Rivaz, and Marta Kersten-Oertel</i>	

The Effect of Non-contrast CT Slice Thickness on Thrombus Density and Perviousness Assessment . . . . .	168
<i>M.L. Tolhuisen, J. Enthoven, E.M.M. Santos, W.J. Niessen,     L.F.M. Beenen, D.W.J. Dippel, A. van der Lugt, W.H. van Zwam,     Y.B.W.E.M. Roos, R.J. van Oostenbrugge, C.B.L.M. Majoie,     and H.A. Marquering</i>	
Quantitative Collateral Grading on CT Angiography in Patients with Acute Ischemic Stroke . . . . .	176
<i>Anna M.M. Boers, Renan Sales Barros, Ivo G.H. Jansen,     Cornelis H. Slump, Diederik W.J. Dippel, Aad van der Lugt,     Wim H. van Zwam, Yvo B.W.E.M. Roos, Robert J. van Oostenbrugge,     Charles B.L.M. Majoie, Henk A. Marquering, and on behalf     of the MR CLEAN Investigators</i>	
<b>Author Index</b> . . . . .	185