

Contents

Deep Learning in Medical Image Analysis

HEp-2 Cell Classification Using K-Support Spatial Pooling in Deep CNNs . . .	3
<i>Xian-Hua Han, Jianmei Lei, and Yen-Wei Chen</i>	
Robust 3D Organ Localization with Dual Learning Architectures and Fusion	12
<i>Xiaoguang Lu, Daguang Xu, and David Liu</i>	
Cell Segmentation Proposal Network for Microscopy Image Analysis	21
<i>Saad Ullah Akram, Juho Kannala, Lauri Eklund, and Janne Heikkilä</i>	
Vessel Detection in Ultrasound Images Using Deep Convolutional Neural Networks.	30
<i>Erik Smistad and Lasse Løvstakken</i>	
Convolutional Neural Network for Reconstruction of 7T-like Images from 3T MRI Using Appearance and Anatomical Features	39
<i>Khosro Bahrami, Feng Shi, Islem Rekik, and Dinggang Shen</i>	
Fast Predictive Image Registration.	48
<i>Xiao Yang, Roland Kwitt, and Marc Niethammer</i>	
Longitudinal Multiple Sclerosis Lesion Segmentation Using Multi-view Convolutional Neural Networks	58
<i>Ariel Birenbaum and Hayit Greenspan</i>	
Automated Retinopathy of Prematurity Case Detection with Convolutional Neural Networks.	68
<i>Daniel E. Worrall, Clare M. Wilson, and Gabriel J. Brostow</i>	
Fully Convolutional Network for Liver Segmentation and Lesions Detection	77
<i>Avi Ben-Cohen, Idit Diamant, Eyal Klang, Michal Amitai, and Hayit Greenspan</i>	
Deep Learning of Brain Lesion Patterns for Predicting Future Disease Activity in Patients with Early Symptoms of Multiple Sclerosis	86
<i>Youngjin Yoo, Lisa W. Tang, Tom Brosch, David K.B. Li, Luanne Metz, Anthony Traboulsee, and Roger Tam</i>	

De-noising of Contrast-Enhanced MRI Sequences by an Ensemble of Expert Deep Neural Networks	95
<i>Ariel Benou, Ronel Veksler, Alon Friedman, and Tammy Riklin Raviv</i>	
Three-Dimensional CT Image Segmentation by Combining 2D Fully Convolutional Network with 3D Majority Voting	111
<i>Xiangrong Zhou, Takaaki Ito, Ryosuke Takayama, Song Wang, Takeshi Hara, and Hiroshi Fujita</i>	
Medical Image Description Using Multi-task-loss CNN	121
<i>Pavel Kisilev, Eli Sason, Ella Barkan, and Sharbell Hashoul</i>	
Fully Automating Graf’s Method for DDH Diagnosis Using Deep Convolutional Neural Networks	130
<i>David Golan, Yoni Donner, Chris Mansi, Jacob Jaremko, Manoj Ramachandran, and on behalf of CUDL</i>	
Multi-dimensional Gated Recurrent Units for the Segmentation of Biomedical 3D-Data	142
<i>Simon Andermatt, Simon Pezold, and Philippe Cattin</i>	
Learning Thermal Process Representations for Intraoperative Analysis of Cortical Perfusion During Ischemic Strokes	152
<i>Nico Hoffmann, Edmund Koch, Gerald Steiner, Uwe Petersohn, and Matthias Kirsch</i>	
Automatic Slice Identification in 3D Medical Images with a ConvNet Regressor	161
<i>Bob D. de Vos, Max A. Viergever, Pim A. de Jong, and Ivana Išgum</i>	
Estimating CT Image from MRI Data Using 3D Fully Convolutional Networks.	170
<i>Dong Nie, Xiaohuan Cao, Yaozong Gao, Li Wang, and Dinggang Shen</i>	
The Importance of Skip Connections in Biomedical Image Segmentation. . . .	179
<i>Michal Drozdal, Eugene Vorontsov, Gabriel Chartrand, Samuel Kadoury, and Chris Pal</i>	
Understanding the Mechanisms of Deep Transfer Learning for Medical Images	188
<i>Hariharan Ravishankar, Prasad Sudhakar, Rahul Venkataramani, Sheshadri Thiruvengadam, Pavan Annangi, Narayanan Babu, and Vivek Vaidya</i>	
A Region Based Convolutional Network for Tumor Detection and Classification in Breast Mammography	197
<i>Ayelet Akselrod-Ballin, Leonid Karlinsky, Sharon Alpert, Sharbell Hasoul, Rami Ben-Ari, and Ella Barkan</i>	

Large-Scale Annotation of Biomedical Data and Expert Label Synthesis

Early Experiences with Crowdsourcing Airway Annotations in Chest CT. . . .	209
<i>Veronika Cheplygina, Adria Perez-Rovira, Wieying Kuo, Harm A.W.M. Tiddens, and Marleen de Bruijne</i>	
Hierarchical Feature Extraction for Nuclear Morphometry-Based Cancer Diagnosis	219
<i>Chi Liu, Yue Huang, Ligong Han, John A. Ozolek, and Gustavo K. Rohde</i>	
Using Crowdsourcing for Multi-label Biomedical Compound Figure Annotation	228
<i>Alba Garcia Seco de Herrera, Roger Schaer, Sameer Antani, and Henning Müller</i>	
Towards the Semantic Enrichment of Free-Text Annotation of Image Quality Assessment for UK Biobank Cardiac Cine MRI Scans	238
<i>Valentina Carapella, Ernesto Jiménez-Ruiz, Elena Lukaschuk, Nay Aung, Kenneth Fung, Jose Paiva, Mihir Sanghvi, Stefan Neubauer, Steffen Petersen, Ian Horrocks, and Stefan Piechnik</i>	
Focused Proofreading to Reconstruct Neural Connectomes from EM Images at Scale.	249
<i>Stephen M. Plaza</i>	
Hands-Free Segmentation of Medical Volumes via Binary Inputs	259
<i>Florian Dubost, Loic Peter, Christian Rupprecht, Benjamin Gutierrez Becker, and Nassir Navab</i>	
Playsourcing: A Novel Concept for Knowledge Creation in Biomedical Research	269
<i>Shadi Albarqouni, Stefan Matl, Maximilian Baust, Nassir Navab, and Stefanie Demirci</i>	
Erratum to: Automated Retinopathy of Prematurity Case Detection with Convolutional Neural Networks	E1
<i>Daniel E. Worrall, Clare M. Wilson, and Gabriel J. Brostow</i>	
Author Index	279

Deep Learning and Data Labeling for Medical
Applications

First International Workshop, LABELS 2016, and Second
International Workshop, DLMIA 2016, Held in
Conjunction with MICCAI 2016, Athens, Greece, October
21, 2016, Proceedings

Carneiro, G.; Mateus, D.; Loïc, P.; Bradley, A.; Tavares,
J.M.R.S.; Belagiannis, V.; Papa, J.P.; Nascimento, J.C.;
Loog, M.; Lu, Z.; Cardoso, J.S.; Cornebise, J. (Eds.)
2016, XIII, 280 p. 115 illus., Softcover
ISBN: 978-3-319-46975-1