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Brainlesion:
Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries

First International Workshop, Brainles 2015
Held in Conjunction with MICCAI 2015
Munich, Germany, October 5, 2015
Revised Selected Papers
Preface

This volume contains articles from the Brain Lesion (BrainLes) workshop as well as the Brain Tumor Segmentation (BRATS) and Ischemic Stroke Lesion Segmentation (ISLES) challenges, which were held jointly at the Medical Image Computing for Computer-Assisted Intervention (MICCAI) Conference on October 5, 2015.

The presented works address computer scientific and clinical researchers working on glioma, multiple sclerosis (MS), cerebral stroke, and traumatic brain injuries. This compilation does not claim to provide a comprehensive understanding from all points of view; however, the authors present their latest advances in segmentation, disease prognosis, and other applications to the clinical context.

The volume is divided into three parts: The first part comprises the submissions to the BrainLes workshop, the second contains a selection of papers regarding methods presented at the BRATS challenge, and the third part includes a selection of papers on methods presented at the ISLES challenge.

The aim of the first part is to provide an overview of new advances in medical image analysis in all of the aforementioned brain pathologies. The contributions bring together researchers from the medical image analysis domain, neurologists, and radiologists working on at least one of these diseases. The aim is to consider neuroimaging biomarkers used for one disease applied to the other diseases. This session did not have a specific dataset to be used.

The second part focuses on the papers from the BRATS challenge. In order to gauge the current state of the art in automated brain tumor segmentation and compare different methods, a large dataset of magnetic resonance imagining (MRI) scans of brain tumors was made available. The participants at the challenge compared the results obtained with their methods against manual segmentations.

The third part contains descriptions of the algorithms participating in ISLES, which aimed to provide a fair and direct comparison of methods for ischemic stroke lesion segmentation from multispectral MRI images. A public dataset of diverse ischemic stroke cases and a suitable automatic evaluation procedure were made available for the following two tasks: subacute ischemic stroke lesion segmentation and acute stroke outcome/penumbra estimation.

We heartily hope that this volume will promote further exciting research on brain lesions.

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Alessandro Crimi
Oskar Maier
Bjoern Menze
Mauricio Reyes
Heinz Handels
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Contents

Brain Lesions, Introduction ................................................................. 1
Alessandro Crimi

Brain Lesion Image Analysis

Simultaneous Whole-Brain Segmentation and White Matter Lesion Detection Using Contrast-Adaptive Probabilistic Models ........................................ 9
Oula Puonti and Koen Van Leemput

Stroke Lesion Segmentation Using a Probabilistic Atlas of Cerebral Vascular Territories ................................................................. 21
Alexandra Derntl, Claudia Plant, Philipp Gruber, Susanne Wegener, Jan S. Bauer, and Bjoern H. Menze

Fiber Tracking in Traumatic Brain Injury: Comparison of 9 Tractography Algorithms ......................................................................................... 33
Emily L. Dennis, Gautam Prasad, Madelaine Daianu, Liang Zhan, Talin Babikian, Claudia Kern, Richard Mink, Christopher Babbitt, Jeffrey Johnson, Christopher C. Giza, Robert F. Asarnow, and Paul M. Thompson

Combining Unsupervised and Supervised Methods for Lesion Segmentation ................................................................. 45
Tim Jerman, Alfia Galimzianova, Franjo Pernuš, Boštjan Likar, and Žiga Špiclin

Assessment of Tissue Injury in Severe Brain Trauma .................. 57
Christophe Maggia, Senan Doyle, Florence Forbes, Olivier Heck, Irène Troprès, Corentin Berthet, Yann Teyssier, Lionel Velly, Jean-François Payen, and Michel Dojat

A Nonparametric Growth Model for Brain Tumor Segmentation in Longitudinal MR Sequences ......................................................... 69
Esther Alberts, Guillaume Charpiat, Yuliya Tarabalka, Thomas Huber, Marc-André Weber, Jan Bauer, Claus Zimmer, and Bjoern H. Menze

A Semi-automatic Method for Segmentation of Multiple Sclerosis Lesions on Dual-Echo Magnetic Resonance Images ........................................ 80
Loredana Storelli, Elisabetta Pagani, Maria Assunta Rocca, Mark A. Horsfield, and Massimo Filippi
Bayesian Stroke Lesion Estimation for Automatic Registration of DTI Images ................................................................. 91
Félix Renard, Matthieu Urvoy, and Assia Jaillard

A Quantitative Approach to Characterize MR Contrasts with Histology .... 104
Yaël Balbastre, Michel E. Vandenberghe, Anne-Sophie Hérard,
Pauline Gipchtein, Caroline Jan, Anselme L. Perrier,
Philippe Hantraye, Romina Aron-Badin, Jean-François Mangin,
and Thierry Delzescaux

Brain Tumor Image Segmentation

Image Features for Brain Lesion Segmentation Using Random Forests .... 119
Oskar Maier, Matthias Wilms, and Heinz Handels

Deep Convolutional Neural Networks for the Segmentation of Gliomas in Multi-sequence MRI ................................................. 131
Sérgio Pereira, Adriano Pinto, Victor Alves, and Carlos A. Silva

GLISTRboost: Combining Multimodal MRI Segmentation, Registration,
and Biophysical Tumor Growth Modeling with Gradient Boosting
Machines for Glioma Segmentation .................................................. 144
Spyridon Bakas, Ke Zeng, Aristeidis Sotiras, Saïma Rathore,
Hamed Akbari, Bilwaj Gaonkar, Martin Rozycki, Sarthak Pati,
and Christos Davatzikos

Parameter Learning for CRF-Based Tissue Segmentation of Brain Tumors . 156
Raphael Meier, Venetia Karamitsou, Simon Habegger, Roland Wiest,
and Mauricio Reyes

Brain Tumor Segmentation Using a Generative Model with an RBM Prior
on Tumor Shape ........................................................................... 168
Mikael Agn, Oula Puonti, Per Munck af Rosenschöld, Ian Law,
and Koen Van Leemput

Multi-modal Brain Tumor Segmentation Using Stacked
Denoising Autoencoders ................................................................ 181
Kiran Vaidhya, Subramaniam Thirunavukarasu, Varghese Alex,
and Ganapathy Krishnamurthi

A Convolutional Neural Network Approach to Brain Tumor Segmentation . 195
Mohammad Havaei, Francis Dutil, Chris Pal, Hugo Larochelle,
and Pierre-Marc Jodoin
Ischemic Stroke Lesion Image Segmentation

ISLES Introduction

ISLES (SISS) Challenge 2015: Segmentation of Stroke Lesions Using Spatial Normalization, Random Forest Classification and Contextual Clustering .................................................... 211
   Hanna-Leena Halme, Antti Korvenoja, and Eero Salli

Stroke Lesion Segmentation of 3D Brain MRI Using Multiple Random Forests and 3D Registration ................................................................. 222
   Ching-Wei Wang and Jia-Hong Lee

Segmentation of Ischemic Stroke Lesions in Multi-spectral MR Images Using Weighting Suppressed FCM and Three Phase Level Set .................... 233
   Chaolu Feng, Dazhe Zhao, and Min Huang

ISLES Challenge 2015: Automated Model-Based Segmentation of Ischemic Stroke in MR Images ................................................................. 246
   Tom Haeck, Frederik Maes, and Paul Suetens

A Voxel-Wise, Cascaded Classification Approach to Ischemic Stroke Lesion Segmentation ................................................................. 254
   David Robben, Daan Christiaens, Janaki Raman Rangarajan,
   Jaap Gelderblom, Philip Joris, Frederik Maes, and Paul Suetens

Automatic Ischemic Stroke Lesion Segmentation in Multi-spectral MRI Images Using Random Forests Classifier ........................................ 266
   Qaiser Mahmood and A. Basit

Segmenting the Ischemic Penumbra: A Decision Forest Approach with Automatic Threshold Finding ........................................ 275
   Richard McKinley, Levin Häni, Roland Wiest, and Mauricio Reyes

Input Data Adaptive Learning (IDAL) for Sub-acute Ischemic Stroke Lesion Segmentation ........................................ 284
   Michael Goetz, Christian Weber, Christoph Kolb, and Klaus Maier-Hein

Author Index ............................................ 297