

Final on-site schedule for 5. October MICCAI 2015

BrainLes: Brain-lesion workshop (BrainLes) Ischemic Stroke Lesion Segmentation Challenge (ISLES) Brain Tumor Image Segmentation Challenge (BRATS)

MORNING

0830-1030 SESSION 1 (Workshop I)

- 0830-0855 INVITED TALK "MS" (20+5 MIN)
Maria Assunta Rocca - Gray matter damage and dysfunction in MS
- 0855-0920 INVITED TALK "STROKE I" (20+5 MIN)
Arya Nabavi - Stroke
- 0920-0945 INVITED TALK "TBI" (20+5 MIN)
Guido Gerig - Medical Imaging of Trauma Brain Injuries
- 0945-0955 CONTRIBUTED PAPER 01 (8+2 MIN)
Emily Dennis - Fiber Tracking in Traumatic Brain Injury: Comparison of 9 Tractography Algorithms
- 0955-1005 CONTRIBUTED PAPER 05 (8+2 MIN)
Oula Puonti - Simultaneous Whole-Brain Segmentation and White Matter Lesion Detection Using Contrast-Adaptive Probabilistic Models
- 1005-1015 CONTRIBUTED PAPER 10 (8+2 MIN)
Esther Alberts - A Nonparametric Model for Brain Tumor Segmentation and Volumetry in Longitudinal MR Sequences
- 1015-1025 CONTRIBUTED PAPER 11 (8+2 MIN)
Tim Jerman - Combining Unsupervised and Supervised Methods for Lesion Segmentation

1030-1100 COFFEE

1100-1230 SESSION 2 (BRATS)

- 1100-1125 INVITED TALK "TUMOR II" (20+5 MIN)
Simon Warfield - Fusing annotations
- 1125-1135 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - "Title"
- 1135-1145 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - "Title"
- 1145-1155 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - "Title"
- 1155-1205 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - "Title"
- 1205-1230 Presentation of results, awards, BRATS discussion, further plans

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AFTERNOON

1230-1330 LUNCH BREAK

1230-1330 Lunchtime poster session with workshop and challenge contributions

1330-1530 SESSION 3 (ISLES)

1330-1355 INVITED TALK “STROKE II” (20+5 MIN)
Bianca de Haan - (Semi)-automated lesion segmentation in stroke

1355-1405 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - “Title”

1405-1415 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - “Title”

1415-1425 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - “Title”

1425-1435 CONTRIBUTED PAPER (8+2 MIN EACH)
Author - “Title”

1435-1500 Presentation of results, awards

1500-1530 ISLES summary & discussion

1530-1600 COFFEE

1600-1700 SESSION 4 (Workshop II)

1600-1625 INVITED TALK “TUMOR I” (20+5 MIN)
Roland Wiest - Advanced Neuroimaging for Glioma

1625-1635 CONTRIBUTED PAPER 07 (8+2 MIN)
Michel Dojat - Assessment of Tissue Injury in Severe Brain Trauma

1635-1645 CONTRIBUTED PAPER 06 (8+2 MIN)
Yael Balbastre - A Quantitative Approach to Characterize MR Contrasts with Histology

1645-1700 Afternoon discussion with invited speakers

1700-1730 GENERAL DISCUSSION

1700-1725 Final workshop and challenge discussion with organizers & speakers

1725-1730 Adjourn

LUNCH TIME POSTER SESSION

Workshop

- Alexandra Derntl - Stroke Lesion Segmentation using a Probabilistic Atlas of Cerebral Vascular Territories (ID 02)
- Massimo Filippi - A Semi-Automatic Method for Segmentation of Multiple Sclerosis Lesions on Dual-Echo Magnetic Resonance Images (ID 04)
- Keelin Murphy - Automatic Segmentation of Cerebral Ischemic Lesions in Neonatal Apparent Diffusion Coefficient Maps (ID 12)
- Félix Renard - Bayesian stroke lesion estimation for automatic registration of DTI images (ID 13)

ISLES: SISS

- ISLES-P-01** Segmentation of Stroke Lesions in Multi-spectral MR Images Using Bias Correction Embedded FCM and Three Phase Level Set
Chaolu Feng, Dazhe Zhao and Min Huang
- ISLES-P-02** A Novel Framework for Sub-acute Stroke Lesion Segmentation Based on Random Forest
Liang Chen, Paul Bentley and Daniel Rueckert
- ISLES-P-03** Multi-Scale 3D Convolutional Neural Networks for Lesion Segmentation in Brain MRI
Konstantinos Kamnitsas, Liang Chen, Christian Ledig, Daniel Rueckert and Ben Glocker
- ISLES-P-04** Random Forests with Selected Features for Stroke Lesion Segmentation
Oskar Maier, Matthias Wilms and Heinz Handels
- ISLES-P-05** Ischemic Stroke Lesion Segmentation Using Local Gradient and Texture Features
Syed MS Reza, Linmin Pei and Khan M Iftekharuddin
- ISLES-P-06** ISLES Challenge 2015: A Voxel-wise, Cascaded Classification Approach to Stroke Lesion Segmentation ^[also in SPES]
David Robben, Daan Christiaens, Janaki Raman Rangarajan, Jaap Gelderblom, Philip Joris, Frederik Maes and Paul Suetens
- ISLES-P-07** ISLES (SISS) Challenge 2015: Segmentation of Stroke Lesions Using Spatial Normalization, Random Forest Classification and Contextual Clustering
Hanna-Leena Halme, Antti Korvenoja and Eero Salli
- ISLES-P-08** Stroke Lesion Segmentation of 3D Brain MRI Using Multiple Random Forests and 3D Registration
Ching-Wei Wang and Jia-Hong Lee

ISLES: SISS (cont.)

ISLES-P-09 Input Data Adaptive Learning (IDAL) for Sub-acute Ischemic Stroke Lesion Segmentation

Michael Goetz, Christian Weber and Klaus Maier-Hein

ISLES-P-10 Distributed Deep Learning Framework for Large-Scale 3D Medical Image Segmentation [also in SPES]

Tassilo Klein, Nematollah K Batmanghelich and William M Wells III

ISLES-P-11 Automatic Ischemic Stroke Lesion Segmentation in Multi-Spectral MRI Images Using Random forests Classifier

Qaiser Mahmood and Abdul Basit

ISLES-P-12 ISLES Challenge 2015: Automated Model-Based Segmentation of Ischemic Stroke in MR Images [also in SPES]

Tom Haeck, Frederik Maes and Paul Suetens

ISLES-P-13 A Convolutional Neural Network Approach to Brain Lesion Segmentation [also in SPES]

Francis Dutil, Mohammad Havaei, Chris Pal, Hugo Larochelle and Pierre-Marc Jodoin

ISLES-P-14 Hierarchical Segmentation of Normal and Lesional Structures Combining an Ensemble of Probabilistic Local Classifiers and Regional Random Forest Classification

Andrew Jesson and Tal Arbel

ISLES-P-15 A Vascular Territory Prior for Bayesian Sub-Acute Ischemic Stroke Lesion Segmentation

Senan Doyle, Florence Forbes, and Michel Dojat

ISLES-P-16 Segmentation of Ischemic Stroke Lesions Using Dictionary Learning

Jean Huang, Lawrence Staib, and James Duncan

ISLES-P-20 Prediction of Ischemic Lesions using Local Image Properties and Random Forests

John Muschelli

ISLES: SPES

- ISLES-P-17** Segmenting the Ischemic Penumbra: A Spatial Random Forest Approach with Automatic Threshold Finding
Richard McKinley, Levin Häni, Roland Wiest and Mauricio Reyes
- ISLES-P-18** Lesion Segmentation of the Penumbra in Acute Stroke in the MICCAI 2015 ISLES Challenge
Elias Kellner, Karl Egger, Maddalena Strumia, Valerij G Kiselev, Horst Urbach and Marco Reisert
- ISLES-P-19** Random Forests for Acute Stroke Penumbra Estimation
Oskar Maier, Matthias Wilms and Heinz Handels
- ISLES-P-06** ISLES Challenge 2015: A Voxel-wise, Cascaded Classification Approach to Stroke Lesion Segmentation [also in SISS]
David Robben, Daan Christiaens, Janaki Raman Rangarajan, Jaap Gelderblom, Philip Joris, Frederik Maes and Paul Suetens
- ISLES-P-12** ISLES Challenge 2015: Automated Model-Based Segmentation of Ischemic Stroke in MR Images [also in SISS]
Tom Haeck, Frederik Maes, and Paul Suetens
- ISLES-P-13** A Convolutional Neural Network Approach to Brain Lesion Segmentation [also in SPES]
Francis Dutil, Mohammad Havaei, Chris Pal, Hugo Larochelle and Pierre-Marc Jodoin
- ISLES-P-10** Distributed Deep Learning Framework for Large-Scale 3D Medical Image Segmentation [also in SISS]
Tassilo Klein, Nematollah K Batmanghelich and William M Wells III

BRATS

- ~10-15, yet unknown

INVITED SPEAKERS

Prof. Guido Gerig, PhD was recruited from the University of North Carolina at Chapel Hill to the University of Utah under the USTAR program. He received his Ph.D. in 1987 from the Swiss Federal Institute of Technology, ETH Zurich, Switzerland. Guido Gerig joined the faculty at UNC Chapel Hill as Taylor Grandy professor in August 1998 and with a joint appointment in the Departments of Computer Science and Psychiatry. In 2008, he accepted a new faculty position at the School of Computing and Scientific Computing and Imaging Institute (SCI) at the University of Utah, with adjunct appointments in Biomedical Engineering and Psychiatry. He is the director of the UTAH Center for Neuroimage Analysis (UCNIA) and supports a number of clinical neuroimaging projects with methodology for image processing, registration, atlas building, segmentation, shape analysis, and statistical analysis. Current key research topics are analysis and modeling of the early developing brain, longitudinal analysis of multi-shape complexes, and new methodologies for statistical analysis of white matter using diffusion tensor imaging. Method developments are driven by challenging clinical applications that include research in schizophrenia, autism, multiple sclerosis, infants at risk for mental illness and aging. He will give a talk with the title "**Medical Imaging of Trauma Brain Injuries**".

Prof. Simon Warfield, PhD is the Thorne Griscom Chair of Radiology at Harvard Medical School, the Director of the Computational Radiology Laboratory (CRL), and the Director of Research of the Department of Radiology at Boston Children's Hospital.

Dr. Warfield founded the Computational Radiology Laboratory in 2001. The CRL was formed with the mission of improving our understanding of the structure and function of the brain and other organs of the human body, in order to improve our capacity to diagnose and treat disease. Members of the CRL achieve this by developing novel technologies and computational modeling strategies for understanding and interpreting radiological images.

His research in the field of medical image analysis has focused on methods for quantitative image analysis through novel segmentation and registration approaches, and in real-time and large data image analysis, enabled by high performance computing technology. Algorithms developed by Dr. Warfield have been applied in several domains, including developing an improved understanding of early brain development, to understanding the association between white matter lesions and cognitive dysfunction in multiple sclerosis, and in enhancing navigation and visualization during image guided surgery.

He will give a talk with the title "**Fusing annotations**".

Prof. Maria Assunta Rocca, MD is currently Head of the "Neuroimaging of CNS White Matter Unit", Department of Neurology, Institute of Experimental Neurology, Scientific Institute Ospedale San Raffaele, Milan, Italy. Her activity is mainly focused on the application of structural and functional MR based techniques to improve the understanding of central nervous system function and dysfunction in healthy individuals and diseased people, particularly patients with multiple sclerosis (MS) and other white matter disorders. Dr. Rocca is currently conducting and coordinating several national and international projects in adult and pediatric populations. She is also extensively applying advanced methods of analysis in an attempt to improve the understanding of the role of brain functional and structural plasticity in the different phases of MS, and the influence of pharmacological and rehabilitative interventions on brain reorganization.

She is member of various national and international Scientific Societies and, in some of them, she covered or is covering institutional roles (MAGNIMS, ENS, Neuroimaging Study Group of the Italian Neurological Society, AMPC of the ISMRM, International Pediatric Multiple Sclerosis Study Group). She coordinated the MRI acquisition and analysis of several large-scale international MRI-monitored trials of MS. Dr. Rocca is author or co-author of more than 300 papers published on peer-reviewed journals and of 40 book chapters. She is also reviewer of several international scientific journals and for many Governmental Organizations and private Foundations. Due to her

scientific activity she participated, as a speaker and/or chairman, to more than 300 international congresses and she received several national and international Awards. In 2013, Dr. Rocca was awarded the “Rita Levi Montalcini” Prize for her outstanding contributions to the study of MS. She will give a talk with the title "**Gray matter damage and dysfunction in MS**".

Dr. Bianca de Haan, PhD is currently leader of the research group "Neuropsychology of Attention" in the Division of Neuropsychology at the Center of Neurology in Tübingen. In her work she uses fMRI, Transcranial Magnetic Stimulation, lesion-symptom mapping and psychophysical methods studying both neurologically healthy subjects and stroke patients. Her research predominantly focuses on studying the mechanisms and anatomy that underlie attention, with a particular emphasis on the mechanisms and anatomy of attention in multi-target environments. Additionally, she is interested in the various methodological issues/problems that surround the scientific study of stroke patients. She will give a talk with the title "(Semi)-Automated lesion segmentation in stroke". She will give a talk with the title "**(Semi)-automated lesion segmentation in stroke**".

Prof. Arya Nabavi, MD is currently the Director of Image Guided Neurosurgical Therapy lab at the International Neuroscience Institute Hannover. He will give a talk with the title "**Stroke**".

Prof. Roland Wiest, MD is currently group leader of the Support Center of Advanced Neuroimaging (SCAN) at the Inselspital University clinic of Bern. The efforts of the SCAN focus on the development and validation of new MRI approaches in order to characterize typical early indicators for the onset of neurodegenerative disorders. New methods under investigation are magnetization transfer (MT) and quantitative susceptibility mapping (QSM). Multiparametric and quantitative classification of neurological disorders. He will give a talk with the title "**Advanced Neuroimaging for Glioma**".

ACCEPTED WORKSHOP CONTRIBUTIONS

A star (*) denotes the talks, all other are posters.

1*

Fiber Tracking in Traumatic Brain Injury: Comparison of 9 Tractography Algorithms
Dennis , Emily

2

Stroke Lesion Segmentation using a Probabilistic Atlas of Cerebral Vascular Territories
Derntl , Alexandra

4

A Semi-Automatic Method for Segmentation of Multiple Sclerosis Lesions on Dual-Echo Magnetic Resonance Images
Filippi , Massimo

5*

Simultaneous Whole-Brain Segmentation and White Matter Lesion Detection Using Contrast-Adaptive Probabilistic Models
Puonti , Oula

6*

A Quantitative Approach to Characterize MR Contrasts with Histology
Balbastre , Yael

7*

Assessment of Tissue Injury in Severe Brain Trauma
Dojat , Michel

10*

A Nonparametric Model for Brain Tumor Segmentation and Volumetry in Longitudinal MR Sequences
Alberts , Esther

11*

Combining Unsupervised and Supervised Methods for Lesion Segmentation
Jerman , Tim

12

Automatic Segmentation of Cerebral Ischemic Lesions in Neonatal Apparent Diffusion Coefficient Maps
Murphy , Keelin

13

Bayesian stroke lesion estimation for automatic registration of DTI images
Renard , Félix