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Martin Reuter · Christian Wachinger
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Spectral and Shape Analysis in Medical Imaging

First International Workshop, SeSAMI 2016
Held in Conjunction with MICCAI 2016
Athens, Greece, October 21, 2016
Revised Selected Papers

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Preface

This volume contains the proceedings of the First International Workshop on Spectral and Shape Analysis in Medical Imaging (SeSAMI 2016) held on October 21, 2016, in Athens, Greece, in conjunction with the 19th International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI 2016). This workshop is an extension of the Spectral Analysis in Medical Imaging (SAMI) workshop held at MICCAI 2015.

Today's image data often represent continuous and time-varying phenomena, usually with a geometric structure. Shape and geometry processing methods are, therefore, starting to receive increased attention, for example, due to their higher sensitivity to local variations relative to traditional markers, such as the volume of a structure. In medical image computing or computer-aided interventions in particular, the understanding of shapes and their geometrical representations enables the modeling of organs from an anatomical as well as a functional perspective.

Moreover, spectral methods provide a wealth of opportunities for studying complex data. They support the analyses by helping to understand high-dimensional structures representing population or disease data and are often combined with shape analysis due to their properties, such as isometry invariance. Both shape and spectral analysis have, therefore, found many applications in medical image analysis.

This workshop provided an invaluable opportunity for researchers to present recent work on spectral and shape analysis, as well as methods at the intersection of these domains, and consisted of two components. The first focused on theoretical aspects and state-of-the-art research on spectral analysis and the characterization of shape in the form of talks and invited expert presentations. The second focused on cutting-edge research on medical image applications in the form of oral presentations of accepted submissions. Novel and original submissions were encouraged on emerging approaches with topics including segmentation, registration, and classification.

We are extremely grateful to the contributors of this SeSAMI workshop. We thank all authors who shared their latest findings, as well as the Program Committee members, and reviewers, who all achieved quality work in a very short time. We also thank our keynote speakers, who kindly accepted our invitations: Guido Gerig, Professor at the New York University, USA, and Tom Fletcher, Professor at the University of Utah, USA.

November 2016

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Christian Wachinger
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Contents

Spectral Methods

A Volumetric Conformal Mapping Approach for Clustering White Matter Fibers in the Brain	3
<i>Vikash Gupta, Gautam Prasad, and Paul Thompson</i>	
Deep Spectral-Based Shape Features for Alzheimer’s Disease Classification	15
<i>Mahsa Shakeri, Herve Lombaert, Shashank Tripathi, Samuel Kadoury, and for the Alzheimer’s Disease Neuroimaging Initiative</i>	
Functional Maps for Brain Classification on Spectral Domain.	25
<i>Simone Melzi, Alessandro Mella, Letizia Squarcina, Marcella Bellani, Cinzia Perlini, Mirella Ruggeri, Carlo Alfredo Altamura, Paolo Brambilla, and Umberto Castellani</i>	

Longitudinal Methods

Volume Representation of Parenchymatous Organs by Volumetric Self-organizing Deformable Model	39
<i>Shoko Miyauchi, Ken’ichi Morooka, Tokuo Tsuji, Yasushi Miyagi, Takaichi Fukuda, and Ryo Kurazume</i>	
Reducing Variability in Anatomical Definitions Over Time Using Longitudinal Diffeomorphic Mapping.	51
<i>Daniel J. Tward, Chelsea S. Sicat, Timothy Brown, Arnold Bakker, and Michael I. Miller</i>	
Spatio-Temporal Shape Analysis of Cross-Sectional Data for Detection of Early Changes in Neurodegenerative Disease	63
<i>Claire Cury, Marco Lorenzi, David Cash, Jennifer M. Nicholas, Alexandre Routier, Jonathan Rohrer, Sebastien Ourselin, Stanley Durrleman, and Marc Modat</i>	

Shape Methods

Longitudinal Scoliotic Trunk Analysis via Spectral Representation and Statistical Analysis	79
<i>Ola Ahmad, Herve Lombaert, Stefan Parent, Hubert Labelle, Jean Dansereau, and Farida Cheriet</i>	

Statistical Shape Model with Random Walks for Inner Ear Segmentation 92
*Esmeralda Ruiz Pujadas, Hans Martin Kjer, Gemma Piella,
and Miguel Angel González Ballester*

Volumetric Image Pattern Recognition Using Three-Way Principal
Component Analysis 103
Hayato Itoh, Atsushi Imiya, and Tomoya Sakai

Shape Preservation Based on Gaussian Radial Basis Function Interpolation
on Human Corpus Callosum. 118
Umut Orcun Turgut and Didem Gokcay

Author Index 133