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# Machine Learning in Medical Imaging

4th International Workshop, MLMI 2013  
Held in Conjunction with MICCAI 2013  
Nagoya, Japan, September 22, 2013  
Proceedings

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# Preface

The 4th International Workshop on Machine Learning in Medical Imaging (MLMI 2013) was held at Toyoda Auditorium Complex, Nagoya, Japan, on September 22, 2013, in conjunction with the 16<sup>th</sup> International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI).

Machine learning plays an essential role in the medical imaging field, including computer-assisted diagnosis, image segmentation, image registration, image fusion, image-guided therapy, image annotation, and image database retrieval. With advances in medical imaging, new imaging modalities and methodologies, such as cone-beam CT, tomosynthesis electrical impedance tomography and new machine learning algorithms/applications, come to the stage for medical imaging. Due to large inter-subject variations and complexities, it is generally difficult to derive analytic formulations or simple equations to represent objects such as lesions and anatomy in medical images. Therefore, tasks in medical imaging require learning from patient data for heuristics and prior knowledge, in order to facilitate the detection/diagnosis of abnormalities in medical images.

The main aim of this MLMI 2013 workshop is to help advance scientific research within the broad field of machine learning in medical imaging. This workshop focuses on major trends and challenges in this area, and presents works aimed to identify new cutting-edge techniques and their use in medical imaging. We hope that the MLMI workshop becomes an important platform for translating research from the bench to the bedside.

The range and level of submissions for this year's meeting were of very high quality. Authors were asked to submit full-length papers for review. A total of 57 papers were submitted to the workshop in response to the call for papers. Each of the 57 papers underwent a rigorous double-blinded peer-review process, with each paper being reviewed by at least two (typically three) reviewers from the Program Committee, composed of 62 well-known experts in the field. Based on the reviewing scores and critiques, the 32 best papers (56%) were accepted for presentation at the workshop and chosen to be included in this Springer LNCS volume. The large variety of machine-learning techniques applied to medical imaging were well represented at the workshop.

We are grateful to the Program Committee for reviewing the submitted papers and giving constructive comments and critiques, to the authors for submitting high-quality papers, to the presenters for excellent presentations, and to all the MLMI 2013 attendees who came to Nagoya from all around the world.

July 2013

Guorong Wu  
Daoqiang Zhang  
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