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Machine Learning in Medical Imaging

First International Workshop, MLMI 2010
Held in Conjunction with MICCAI 2010
Beijing, China, September 20, 2010
Proceedings

Springer
Preface

The first International Workshop on Machine Learning in Medical Imaging, MLMI 2010, was held at the China National Convention Center, Beijing, China on September 20, 2010 in conjunction with the International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2010.

Machine learning plays an essential role in the medical imaging field, including image segmentation, image registration, computer-aided diagnosis, 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/multi-slice CT, 3D Ultrasound, tomosynthesis, diffusion-weighted MRI, electrical impedance tomography, and diffuse optical tomography, new machine-learning algorithms/applications are demanded in the medical imaging field. Single-sample evidence provided by the patient’s imaging data is often not sufficient to provide satisfactory performance; therefore tasks in medical imaging require learning from examples to simulate a physician’s prior knowledge of the data. The MLMI 2010 is the first workshop on this topic. The workshop focuses on major trends and challenges in this area, and works to identify new techniques and their use in medical imaging. Our goal is to help advance the scientific research within the broad field of medical imaging and machine learning.

The range and level of submission for this year’s meeting was of very high quality. Authors were asked to submit full-length papers for review. A total of 38 papers were submitted to the workshop in response to the call for papers. Each of the 38 papers underwent a rigorous double-blinded peer-review process, with each paper being reviewed by at least two (typically three) external reviewers in the program committee composed of over 30 known experts in the field. Based on the reviewing scores and critics, the 23 best papers (60%) were chosen to be included in this Springer LNCS volume. The large variety of machine learning techniques necessary for and applied to medical imaging was well represented at the workshop.

We would like to thank our invited keynote speaker, Prof. Milan Sonka, Chair of the Department of Electrical and Computer Engineering at The University of Iowa, whose excellent presentation was a highlight of the workshop. We are very grateful to the Program Committee and, in particular, to all those who supported the MLMI 2010 by submitting papers and attending the meeting. We would also like to thank Philips for sponsoring the Best Paper Award of MLMI 2010.

July 2010

Fei Wang
Pingkun Yan
Kenji Suzuki
Dinggang Shen
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