

Preface

The First International Workshop on Patch-Based Techniques in Medical Imaging (Patch-MI 2015) was held at Munich, Germany, on October 9, 2015, in conjunction with the 18th International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI).

The patch-based technique plays an increasing role in the medical imaging field, with various applications in image segmentation, image denoising, image super-resolution, computer-aided diagnosis, image registration, abnormality detection, and image synthesis. For example, patch-based approaches using the training library of annotated atlases have been the focus of much attention in segmentation and computer-aided diagnosis. It has been shown that the patch-based strategy based on a training library is able to produce an accurate representation of data, while the use of a training library enables one to easily integrate prior knowledge to the model. As an intermediate level between the global image and the localized voxel, patch-based models offer an efficient and flexible way to represent very complex anatomies.

The main aim of the Patch-MI 2015 workshop was to promote methodological advances within the field of patch-based processing in medical imaging. The workshop focused on major trends and challenges in this area, and tried to identify new cutting-edge techniques and their use in medical imaging. We hope the workshop becomes a new platform for translating research from the bench to the bedside. We look for original, high-quality submissions on innovative research and development in the analysis of medical image data using patch-based techniques.

The quality of submissions for this year's meeting was very high. Authors were asked to submit eight-page papers for review. A total of 35 papers were submitted to the workshop in response to the call for papers. Each of the 35 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 25 best papers were accepted for presentation at the workshop and chosen to be included in this volume of *Lecture Notes in Computer Science* published by Springer. A large variety of patch-based 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 their excellent presentations, and to all the Patch-MI 2015 attendees who came to Munich from all around the world.

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