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Medical Image Computing and Computer-Assisted Intervention – MICCAI 2014

17th International Conference
Boston, MA, USA, September 14-18, 2014
Proceedings, Part I



Springer

Preface

The 17th International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI 2014) was held in Boston, USA, at the Massachusetts Institute of Technology (MIT) and Harvard Medical School during September 14-18, 2014. We were delighted to welcome the conference back to the location of the very first MICCAI meeting that took place on MIT campus in 1998. Over the last 16 years, the MICCAI conferences have become a premier international event, with papers of high standard addressing open problems in the multidisciplinary fields of biomedical image computing, computer-assisted intervention, and medical robotics. The conference attracts leading scientists, engineers, and clinicians from a wide range of disciplines.

This year, we received a record number of 862 submissions. These covered medical image computing (functional and diffusion image analysis, segmentation, physical and functional modeling, shape analysis, atlases and statistical models, registration, data fusion and multiscale analysis), computer-assisted interventions and robotics (planning and image guidance of interventions, simulation and training systems, clinical platforms, visualization and feedback, robotics and human-robot interaction), and clinical imaging and biomarkers (computer-aided diagnosis, organ/system specific applications, molecular and optical imaging and imaging biomarkers). A careful systematic review process was carried out to create the most exciting scientific program for MICCAI 2014. The Program Committee (PC) of the conference was composed of 52 experts recognized internationally in the main topics of the conference. Each submission was assigned to a primary PC member who recruited between three and four external reviewers for each paper based on their expertise and the topic of the paper. The external reviewers provided double-blind reviews of the papers. Each submission without consensus among the external reviewers was assigned to two secondary PC members and was invited to submit a rebuttal followed by discussion among the external reviewers. Each secondary PC member made recommendations to the PC while taking into account the external reviews, the rebuttal, and the discussion. The list of accepted papers was finalized during a two-day PC meeting held at MIT during May 17-18, 2014, based on the scores and rankings provided by the PC members and external reviewers and on the discussion among the PC members. In all, we accepted 253 papers (29%) to be included in the proceedings of MICCAI 2014 and presented as posters during the meeting. Of these, 36 were selected for podium presentation (4%). We congratulate those who had papers accepted and encourage those who did not to persevere and submit again next year. Selection of papers for MICCAI is a competitive process and with such a strong submission pool it is inevitable that many good papers could not be included in the final program. We sympathize with the authors whose papers were rejected; we had our own share of rejected papers this year!

In addition to the main conference, MICCAI 2014 offered a rich program of workshops, computational challenges, and tutorials. We received a fantastic set of proposals that resulted in an exciting, diverse, and high-quality program. The workshops provided a comprehensive coverage of topics not fully explored during the main conference and of emerging areas of MICCAI; the computational challenges explored empirical solutions to hard open problems; the tutorials provided educational material for training new professionals in the field. We are grateful to all workshop, challenge, and tutorial organizers for making these events a success and to the workshop chairs for creating such a great program.

MICCAI 2014 introduced a completely new Educational Challenge, conceived, organized, and run by the MICCAI Student Board. The long-term goal is to create a video library of educational presentations for students entering the fields. The Educational Challenge was a great step in that direction, and we hope MICCAI will continue to support this effort. Our many thanks go out to the students who organized the challenge. We would also like to thank our invited speaker Neville Hogan (MIT, USA) for his presentation on the use of robots for rehabilitation.

We thank the external reviewers and the PC for volunteering their time and judgement to provide high-quality reviews and ensure a fair paper selection process. The continued improvement in the quality of the conference depends entirely on this tremendous effort. We thank James Stewart of *precisionconference.com* for the efficient organization of the website and amazingly fast responses to our questions and requests for changes. The conference would not be possible without the commitment and hard work of the MIT Conference Services staff that contributed tremendous amount of effort and energy to make sure all the logistics of the meeting ran smoothly. Our special thanks go out to Amy Hansen, who singlehandedly compiled the conference proceedings and conference program brochures, spent many hours in communications with the authors to ensure their papers are properly included in the proceedings, and handling many other aspects of the paper submission process. We also thank all the session chairs for managing and coordinating the presentations during the conference.

We thank the MICCAI Society for providing valuable input and support for the conference. We were delighted to have had a chance to organize a 10th anniversary celebration for the society. Many happy returns! Last but not least, we would like to thank all our sponsors for their kind support. Their generosity ensured the highest quality of the conference and essential support to students and young researchers.

It was our pleasure to welcome MICCAI 2014 participants to Boston. We look forward to seeing you all again next year in Munich, Germany!

September 2014

Polina Golland
Nobuhiko Hata
Christian Barillot
Joachim Hornegger
Robert Howe

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