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Medical Image Computing and Computer-Assisted Intervention – MICCAI 2010

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Proceedings, Part II

Volume Editors

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Preface

The 13th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2010, was held in Beijing, China from 20-24 September, 2010. The venue was the China National Convention Center (CNCC), China's largest and newest conference center with excellent facilities and a prime location in the heart of the Olympic Green, adjacent to characteristic constructions like the Bird's Nest (National Stadium) and the Water Cube (National Aquatics Center).

MICCAI is the foremost international scientific event in the field of medical image computing and computer-assisted interventions. The annual conference has a high scientific standard by virtue of the threshold for acceptance, and accordingly MICCAI has built up a track record of attracting leading scientists, engineers and clinicians from a wide range of technical and biomedical disciplines.

This year, we received 786 submissions, well in line with the previous two conferences in New York and London. Three program chairs and a program committee of 31 scientists, all with a recognized standing in the field of the conference, were responsible for the selection of the papers. The review process was set up such that each paper was considered by the three program chairs, two program committee members, and a minimum of three external reviewers. The review process was double-blind, so the reviewers did not know the identity of the authors of the submission.

After a careful evaluation procedure, in which all controversial and gray area papers were discussed individually, we arrived at a total of 251 accepted papers for MICCAI 2010, of which 45 were selected for podium presentation and 206 for poster presentation. The acceptance percentage (32%) was in keeping with that of previous MICCAI conferences. All 251 papers are included in the three MICCAI 2010 LNCS volumes.

We are greatly indebted to the reviewers and to the members of the program committee for their invaluable efforts in critically assessing and evaluating the submissions in a very short time frame.

The annual MICCAI event has, in addition to its main conference, a rising number of satellite tutorials and workshops, organized on the day before and the day after the main conference. This year's call for submission for tutorials and workshops led to a record number of proposals, of which a significant fraction had to be rejected because of space and time limitations. The final program hosted eight tutorials, which together gave a comprehensive overview of many areas of the field, and provided rich educational material especially aimed at PhD students and postdoctoral researchers.

The 15 workshops gave - mostly younger - researchers the opportunity to present their work, often in an early stage of their investigations, so that they could obtain useful feedback from more experienced scientists in the field. The

workshop subjects highlighted topics that were not all fully covered in the main conference, and thus added to the diversity of the MICCAI program. In particular, several workshops offered so-called challenges in which researchers were in competition to best segment or register a set of clinical images with ground truth provided by medical experts. We are grateful to the tutorial and workshop committees, in particular to the chairs Dinggang Shen and Bram van Ginneken, for making these satellite events a success.

Highlights of the conference were the two keynote lectures. Professor Alan C. Evans of the McConnell Brain Imaging Centre, Montreal Neurological Institute, McGill University, Montreal, Canada described recent activity in brain network modeling with an emphasis on anatomical correlation analysis in his presentation “Network Analysis of Cortical Anatomy”. Professor Guang-Zhong Yang of the Royal Society/Wolfson Medical Image Computing Laboratory, Imperial College, London, UK outlined key clinical challenges and research opportunities in developing minimally invasive surgery systems in his presentation “Snake and Lobster - A Feast for MICCAI?”.

MICCAI 2010 would not have been feasible without the efforts of many people behind the scenes. We are particularly indebted to the local organizing committee in Beijing, consisting of Nianming Zuo, Yong Liu, Ming Song, Bing Liu, Bizhen Hong, Shaomei Wang, and Gangqin Zhang, all of the Institute of Automation of the Chinese Academy of Sciences, for their excellent work before and during the conference, and to Jacqueline Wermers for her outstanding assistance with the editorial work in compiling the three Springer LNCS books that contain the proceedings of this conference.

We are obliged to the Board of the MICCAI Society for the opportunity to organize this prestigious conference, and to many of the Society Board and Staff members for valuable and continuous advice and support through all phases of the preparation.

A special word of thanks goes to our sponsors, who generously provided financial support of the conference as a whole, or of specific activities. This greatly helped us with the overall organization of the meeting, as well as allowed us to award prizes for best papers in various categories and travel stipends to an appreciable number of student participants.

It was our great pleasure to welcome the attendees to Beijing for this exciting MICCAI 2010 conference and its satellite tutorials and workshops. The 14th International Conference on Medical Image Computing and Computer-Assisted Intervention will be held in Toronto, Canada, from 15-21 September 2011. We look forward to seeing you there.

September 2010

Tianzi Jiang
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Awards Presented at the 12th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2009, London

MICCAI Society Enduring Impact Award

The Enduring Impact Award is the highest award of the Medical Image Computing and Computer-Assisted Intervention Society. It is a career award for continued excellence in the MICCAI research field. The 2009 Enduring Impact Award was presented to **Ron Kikinis**, Harvard Medical School, USA.

MICCAI Society Fellowships

MICCAI Fellowships are bestowed annually on a small number of senior members of the Society in recognition of substantial scientific contributions to the MICCAI research field and service to the MICCAI community. The first fellowships were presented in 2009, to

Nicholas Ayache (INRIA Sophia-Antipolis, France)

Alan Colchester (University of Kent, UK)

Takeyoshi Dohi (University of Tokyo, Japan)

Guido Gerig (University of Utah, USA)

David Hawkes (University College London, UK)

Karl Heinz Höhne (University of Hamburg, Germany)

Ron Kikinis (Harvard Medical School, USA)

Terry Peters (Robarts Research Institute, Canada)

Richard Robb (Mayo Clinic, USA)

Chris Taylor (University of Manchester, UK)

Russ Taylor (Johns Hopkins University, USA)

Max Viergever (University Medical Center Utrecht, The Netherlands).

MedIA-MICCAI Prize

The 2009 MedIA-MICCAI Prize for the best paper in the special MICCAI issue of Medical Image Analysis, sponsored by Elsevier, was awarded to

Vicky Wang (University of Auckland, New Zealand)

for the article “Modelling passive diastolic mechanics with quantitative MRI of cardiac structure and function”, authored by Vicky Y. Wang, Hoi I. Lam, Daniel B. Ennis, Brett R. Cowan, Alistair A. Young, and Martyn P. Nash.

Best Paper in Navigation

The prize for the best paper in the MICCAI 2009 conference in the area of navigation, sponsored by Medtronic, was awarded to

Wolfgang Wein (Siemens Corporate Research, Princeton, USA)

for the article: “Towards guidance of electrophysiological procedures with real-time 3D intracardiac echocardiography fusion to C-arm CT”, authored by Wolfgang Wein, Estelle Camus, Matthias John, Mamadou Diallo, Christophe Duong, Amin Al-Ahmad, Rebecca Fahrig, Ali Khamene, and Chenyang Xu.

Best Paper in Computer-Assisted Intervention Systems and Medical Robotics

The prize for the best paper in the MICCAI 2009 conference in the area of computer-assisted intervention systems and medical robotics, sponsored by Intuitive Surgical, was awarded to

Marcin Balicki (Johns Hopkins University, USA)

for the article “Single fiber optical coherence tomography microsurgical instruments for computer and robot-assisted retinal surgery”, authored by Marcin Balicki, Jae-Ho Han, Iulian Iordachita, Peter Gehlbach, James Handa, Russell Taylor, Jin Kang.

MICCAI Young Scientist Awards

The Young Scientist Awards are stimulation prizes awarded to the best first authors of MICCAI contributions in distinct subject areas. The nominees had to be a full-time student at a recognized university at - or within the two years before - the time of submission. The 2009 MICCAI Young Scientist Awards were presented to

Tammy Riklin Raviv (MIT, USA), for the article “Joint segmentation of image ensembles via latent atlases”

Christopher Rohkohl (Friedrich-Alexander University, Germany), for the article “Interventional 4-D motion estimation and reconstruction of cardiac vasculature without motion”

Peter Savadjiev (Harvard Medical School, USA), for the article “Local white matter geometry indices from diffusion tensor gradients”

Lejing Wang (TU Munich, Germany), for the article “Parallax-free long bone X-ray image stitching”

Yiyi Wei (INRIA Lille, France; LIAMA CASIA, China), for the article “Toward real-time simulation of blood-coil interaction during aneurysm embolization”.

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