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Medical Image Computing and Computer-Assisted Intervention – MICCAI 2007

10th International Conference
Brisbane, Australia, October 29 – November 2, 2007
Proceedings, Part I

Springer

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Preface

The 10th International Conference on Medical Imaging and Computer Assisted Intervention, MICCAI 2007, was held at the Brisbane Convention and Exhibition Centre, South Bank, Brisbane, Australia from 29th October to 2nd November 2007.

MICCAI has become a premier international conference in this domain, with in-depth papers on the multidisciplinary fields of biomedical image computing, computer assisted intervention and medical robotics. The conference brings together biological scientists, clinicians, computer scientists, engineers, mathematicians, physicists and other interested researchers and offers them a forum to exchange ideas in these exciting and rapidly growing fields.

The conference is both very selective and very attractive: this year we received a record number of 637 submissions from 35 countries and 6 continents, from which 237 papers were selected for publication. Some interesting facts about the distribution of submitted and accepted papers are shown graphically at the end of this preface.

A number of modifications were introduced into the selection process this year.

1. An enlarged Program Committee of 71 members was recruited by the Program Chair and Co-chair, to get a larger body of expertise and geographical coverage.
2. New key words regrouped within 7 new categories were introduced to describe the content of the submissions and the expertise of the reviewers.
3. Each submitted paper was assigned to 3 Program Committee members whose responsibility it was to assign each paper to 3 external experts (outside of the Program Committee membership) who provided scores and detailed reports in a double blind procedure.
4. Program Committee members provided a set of normalized scores for the whole set of papers for which they were responsible (typically 27 papers). They did this using the external reviews and their own reading of the papers and had to complete missing reviews themselves. Program Committee members eventually had to provide a recommendation for acceptance of the top 35% of their assigned papers.
5. During a 2 day meeting of about 20 members of the Program Committee in Sophia-Antipolis, France, borderline papers were examined carefully and the final set of papers was accepted to appear in the LNCS proceedings. A top list of about 100 papers was scrutinized to provide the Program Chair and Co-chair with a list of 54 potential podium presentations.
6. From this list, the Program Chair and Co-chair selected 38 podium presentations to create a program with a reasonable number of oral sessions and spread of content.

7. Because 199 excellent contributions would be presented as posters, it was decided in consultation with the MICCAI Society Board to augment the time allocated to the poster sessions, and replace the oral poster teasers by continuous video teasers run on large screens during the conference.

The selection procedure was very selective, and many good papers remained among the 400 rejected. We received 9 factual complaints from the authors of rejected papers. A subcommittee of the Program Committee treated all of them equally, checking carefully that no mistake had been made during the selection procedure. In a few cases, an additional review was requested from an independent Program Committee member. In the end, all the original decisions were maintained, but some additional information was provided to the authors to better explain the final decision.

Seven MICCAI Young Scientist Awards were presented by the MICCAI Society on the last day of the conference. The selection was made before the conference by nominating automatically the 21 eligible papers with the highest normalized scores (provided by the Program Committee during the reviewing procedure), and regrouping them into the 7 main categories of the conference. A subgroup of the Program Committee had to vote to elect one paper out of 3 in each category.

The 2007 MedIA-MICCAI Prize was offered by Elsevier to the first author of an outstanding article in the special issue of the Medical Image Analysis Journal dedicated to the previous conference MICCAI 2006. The selection was organized by the guest-editors of this special issue.

We want to thank wholeheartedly all Program Committee members for their exceptional work, as well as the numerous external expert reviewers (who are listed on the next pages). We should also acknowledge the substantial contribution made towards the successful execution of MICCAI 2007 by the BioMedical Image Analysis Laboratory team at the CSIRO ICT Centre / e-Health Research Centre.

It was our pleasure to welcome MICCAI 2007 attendees in Brisbane. This was the first time the conference had been held in Australia, indeed only the second time outside of Europe/North America, the other being MICCAI 2002 in Japan. This trend will continue with MICCAI 2010, which is planned for Beijing. The vibrant sub-tropical river city of Brisbane with its modern style and world-class conference venue was a popular choice and a convenient point of departure for delegates who took the opportunity while there to see more of the Australian outback.

We thank our two invited keynote speakers, Prof. Peter Hunter from the Bioengineering Institute at the University of Auckland, New Zealand, and Prof. Stuart Crozier from Biomedical Engineering at the University of Queensland, Brisbane, whose excellent presentations were a highlight of the conference. We also acknowledge with much gratitude the contributions of Terry Peters, MICCAI 2007 General Co-Chair, whose strong connection with the MICCAI Society and past MICCAI conferences proved invaluable to us. We also note our thanks

to our sponsors, without whose financial assistance the event would have been a far lesser one.

We look forward to welcoming you to MICCAI 2008, to be held 4-8 September in New York City, USA, and MICCAI 2009, scheduled to be held in London, UK.

October 2007

Nicholas Ayache
Sébastien Ourselin
Anthony Maeder

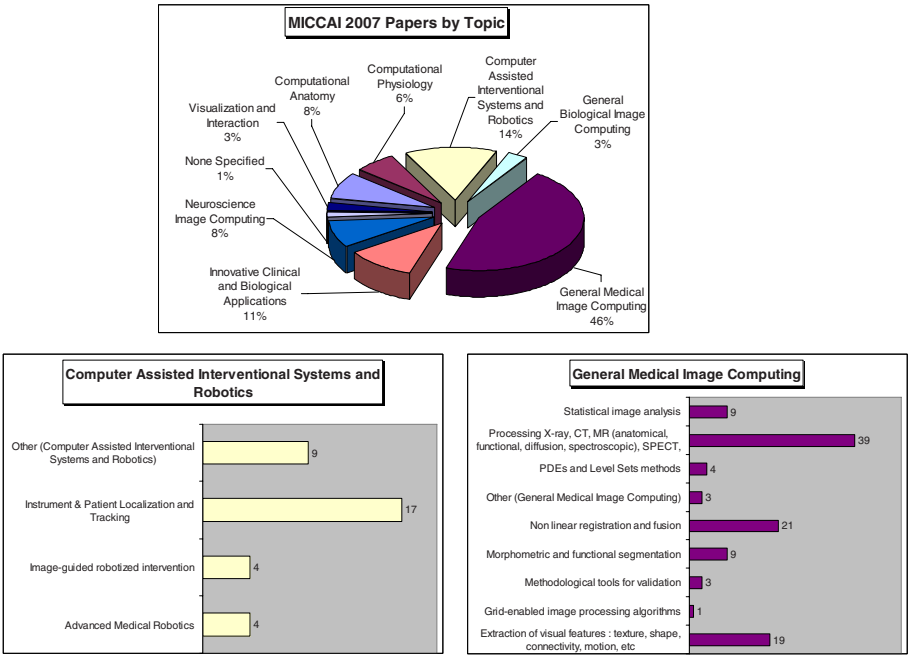

Fig. 1. View at a glance of MICCAI 2007 accepted submissions based on the declared primary keyword. A total of 237 full papers were presented.

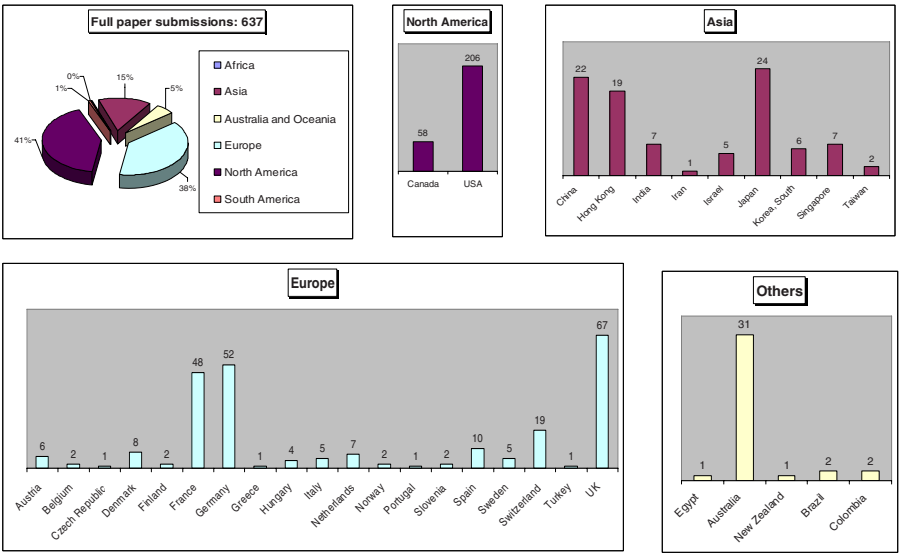

Fig. 2. Distribution of MICCAI 2007 submissions (637 in total) by continent

MICCAI Young Scientist Awards

The MICCAI Young Scientist Award is a prize of US$500 awarded to the first author (in person) for the best paper in a particular topic area, as judged by reviewing and presentation (oral or poster). At MICCAI 2007, up to 7 prizes were available, in the topic areas publicised in the conference CFP:

1. General Medical Image Computing
2. Computer Assisted Intervention Systems and Robotics
3. Visualization and Interaction
4. General Biological and Neuroscience Image Computing
5. Computational Anatomy
6. Computational Physiology
7. Innovative Clinical and Biological Applications

All current first author students and early career scientists attending MICCAI 2007 were eligible. The awards were announced and presented at the closing session of the conference on Thursday, 1st November 2007.

MICCAI 2005 Student Awards

Image Segmentation and Analysis: Pingkun Yan, "MRA Image Segmentation with Capillary Active Contour"

Image Registration: Ashraf Mohamed, "Deformable Registration of Brain Tumor Images via a Statistical Model of Tumor Induced Deformation"

Computer-Assisted Interventions and Robotics: Henry C. Lin, "Automatic Detection and Segmentation of Robot Assisted Surgical Motions"

Simulation and Visualization: Peter Savadjiev, "3D Curve Inference for Diffusion MRI Regularization"

Clinical Application: Srinivasan Rajagopalan, "Schwarz Meets Schwann: Design and Fabrication of Biomorphic Tissue Engineering Scaffolds"

MICCAI 2006 Student Awards

Image Segmentation and Registration: Delphine Nain, "Shape-Driven 3D Segmentation Using Spherical Wavelets"

Image Analysis: Karl Sjöstrand, "The Entire Regularization Path for the Support Vector Domain Description"

Simulation and Visualization: Andrew W. Dowsey, "Motion-Compensated MR Valve Imaging with COMB Tag Tracking and Super-Resolution Enhancement"

Computer-Assisted Interventions and Robotics: Paul M. Novotny, "GPU Based Real-Time Instrument Tracking with Three Dimensional Ultrasound"

Clincial Applications: Jian Zhang, "A Pilot Study of Robot-Assisted Cochlear Implant Surgery Using Steerable Electrode Arrays"

The 2007 MedIA-MICCAI Prize

This prize is awarded each year by Elsevier to the first author of an outstanding article of the previous MICCAI conference, which is published in the MICCAI special issue of the Medical Image Analysis Journal.

In 2006, the prize was awarded to T. Vercauteren, first author of the article:

Vercauteren, T., Perchant, A., Pennec, X., Malandain, G., Ayache, N.: Robust mosaicing with correction of motion distortions and tissue deformations for in vivo fibered microscopy. Med. Image Anal. 10(5), 673–692 (2006)

In 2005, the prize was awarded to D. Burschka and M. Jackowski who are the first authors of the articles:

Burschka, D., Li, M., Ishii, M., Taylor, R.H., Hager, G.D.: Scale invariant registration of monucular endoscopic images to CT-Scans for sinus surgery. Med. Image Anal. 9(5), 413–426 (2005)

Jackowski, M., Kao, C.Y., Qiu, M., Constable, R.T., Staib, L.H.: White matter tractography by anisotropic wave front evolution and diffusion tensor imaging. Med. Image Anal. 9(5), 427–440 (2005)

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