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Guido Gerig (Eds.)

Medical Image Computing and Computer-Assisted Intervention – MICCAI 2005

8th International Conference
Palm Springs, CA, USA, October 2005
Proceedings, Part I

1 Part I



MICCAI



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Preface

The 8th International Conference on Medical Imaging and Computer Assisted Intervention, MICCAI 2005, was held in Palm Springs, California, USA, at the Riviera Resort, October 26–29, 2005.

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

The impact of MICCAI increases each year and the quality and quantity of submitted papers this year was very impressive. We received a record 632 full submissions (8 pages in length), an increase of 22% from 2004, from 36 different countries and 5 continents (see fig. 2). Based on a decision of the MICCAI board, this year's conference employed a double-blind review procedure on a trial basis. Our Program Committee was made up of 11 area chairs, each of whom supervised the review of almost 60 papers. Four reviews were generated for each paper from 262 reviewers and the area chairs. A final paper selection meeting took place during two days in early June 2005 in Chapel Hill, North Carolina. We are especially grateful to Elizabeth Bullitt, Polina Golland, David Haynor, Rasmus Larsen, Greg Hager and Daniel Rückert, who attended this meeting and helped us make the final selections. Martin Styner provided valuable help with information management and the Web-site, and James Stewart is acknowledged for reliable and timely support of the Web-based reviewing system. We are grateful to everyone who participated in the review process; they donated a large amount of time and effort to make these volumes possible and insure a high level of quality. Because of the overall quality of the submissions and because of the limited number of slots available for presentation, paper selection was especially challenging. The MICCAI 2005 Program Committee finally accepted 236 full papers. The normal mode of presentation at MICCAI 2005 was as a poster; in addition, 46 papers were chosen for oral presentation. All of the full papers accepted are included in these proceedings in 8-page format. We also accepted 34 short communications (2 pages) which were presented as posters but not included in the proceedings.

The first figure below shows the distribution of the 236 full paper contributions by topic; the topics are defined by the primary keyword of the submission. The second figure illustrates the distribution of full paper submissions (a total of 632) by region.

We note that this year's program included some new features, including a session on Cellular and Molecular Imaging and Analysis. We hope that all who

attended the 2005 meeting felt as we do that the program was both strong and diverse, within the range of topics covered by MICCAI.

It was our pleasure to welcome this year's MICCAI 2005 attendees to Palm Springs. Sitting in lush farming land, Palm Springs does not conform to any typical image of the desert, embodying a mix of Spanish Colonial and mid-twentieth century modern styling. Ever since Hollywood stars first came here in the 1930s, laying claim to ranch-style estates, holing up in elite hotels, and enjoying the clean dry air and sunshine, Palm Springs has been a special place to visit. We hope that the attendees, in addition to visiting the conference, took the opportunity to enjoy the hospitality and amenities of the Riviera Resort, and to explore the city, the desert region, and other parts of Southern California. For those unable to attend, we trust that these volumes will provide a valuable record of the state of the art in the MICCAI disciplines.

We also want to thank both our sponsors who are listed below and our two keynote speakers, Profs. Scott Fraser from Caltech and Arthur Toga from UCLA for excellent and stimulating lectures.

Finally, we note that this year a landmark event occurred in the life of MICCAI, namely the formation of the Medical Image Computing and Computer-Assisted Intervention Society (the MICCAI Society) which was officially announced on December 9, 2004. The main focus of the society is our annual international conference series (www.miccai.org) which has become the premier conference in the field of medical image computing and computer-assisted interventions, including biomedical imaging and robotics. The society is governed and administered by the MICCAI Board of Directors. The society will continue to publish the proceedings of the annual MICCAI conference in a prestigious scientific series. Having a paper accepted for publication in this series is highly meritorious and on a par with publication in highly regarded peer-reviewed journals in the field. The society is negotiating with three journals in the field of MICCAI themes, each to become "an affiliated MICCAI journal". These journals will offer significant benefits to members, including sharply discounted rates for paper subscriptions and access to on-line content. The society will continue to develop, enrich, and maintain a dynamic website with exclusive content for members (www.miccai.org).

We look forward to welcoming you to MICCAI 2006, to be held October 2–4, 2006 in Copenhagen, Denmark, and chaired by Mads Nielsen.

October 2005

James Duncan and Guido Gerig

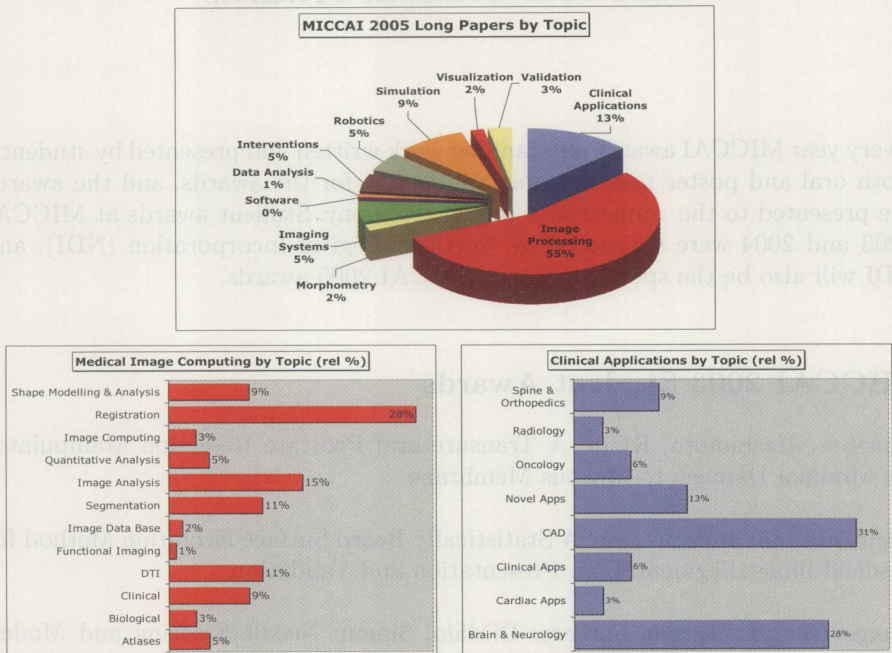


Fig. 1. View at a glance of MICCAI 2005 full paper contributions based on the declared primary keyword. A total of 236 full papers were presented

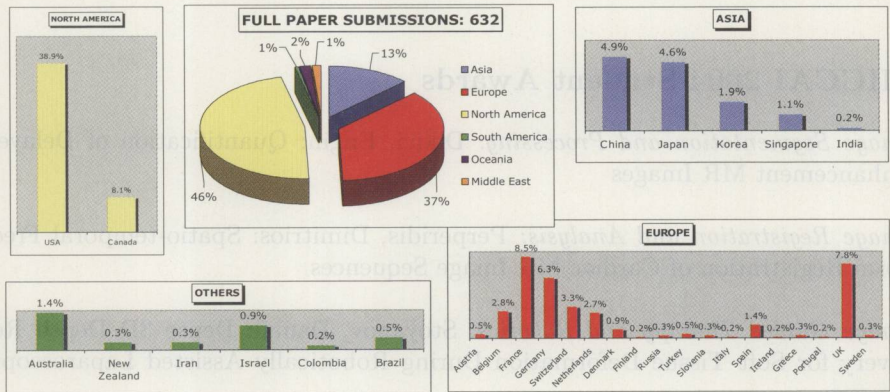


Fig. 2. Distribution of MICCAI 2005 full paper submissions (632 in total) by region

MICCAI Student Awards

Every year MICCAI awards outstanding work written and presented by students. Both oral and poster presentations are eligible for the awards, and the awards are presented to the winners in a public ceremony. Student awards at MICCAI 2003 and 2004 were sponsored by Northern Digital Incorporation (NDI), and NDI will also be the sponsor for the MICCAI 2005 awards.

MICCAI 2003 Student Awards

Robotics: Hashimoto, Ryuji: A Transurethral Prostate Resection Manipulator for Minimal Damage to Mucous Membrane

Segmentation: Pichon, Eric: A Statistically Based Surface Evolution Method for Medical Image Segmentation: Presentation and Validation

Image Guided Therapy Surgery: DiMaio, Simon: Needle Steering and Model-Based Trajectory Planning

Medical Image Analysis: Fillard, Pierre: Quantitative Analysis of White Matter Fiber Properties Along Geodesic Paths

Medical Image Processing and Visualization: Arsigny, Vincent: Polyrigid and Polyaffine Transformations: A New Class of Diffeomorphisms

MICCAI 2004 Student Awards

Image Segmentation and Processing: Dikici, Engin: Quantification of Delayed Enhancement MR Images

Image Registration and Analysis: Perperidis, Dimitrios: Spatio-temporal Free-Form Registration of Cardiac MR Image Sequences

Image Guided Therapy and Robotics: Stoyanov, Danail: Dense 3D Depth Recovery for Soft Tissue Deformation During Robotically Assisted Laparoscopic Surgery

Image Simulation and Display: Valtorta, Davide: Dynamic Measurements of Soft Tissue Viscoelastic Properties with a Torsional Resonator Device

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