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Clinical Image-Based Procedures

From Planning to Intervention

International Workshop, CLIP 2012
Held in Conjunction with MICCAI 2012
Nice, France, October 5, 2012
Revised Selected Papers

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Preface

On October 5, 2012, the International Workshop on Clinical Image-based Procedures: From Planning to Intervention (CLIP 2012) was held in Nice, France, in conjunction with the 15th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI). This successful workshop constituted a productive and exciting forum for the discussion and dissemination of clinically tested, state-of-the-art methods for image-based planning, monitoring and evaluation of medical procedures.

Over the past few years, there has been considerable and growing interest in the development and evaluation of new translational image-based techniques in the modern hospital. For a decade or more, a proliferation of meetings dedicated to medical image computing has created a need for greater study and scrutiny of the clinical application and validation of such methods. New attention and new strategies are essential to ensure a smooth and effective translation of computational image-based techniques into the clinic. For these reasons and to complement other technology-focused MICCAI workshops on computer assisted interventions, the main focus of CLIP 2012 was on filling gaps between basic science and clinical applications.

Members of the medical imaging community were encouraged to submit work centered on specific clinical applications, including techniques and procedures based on clinical data or already in use and evaluated by clinical users. The event brought together some 40 world-class researchers and clinicians who presented ways to strengthen links between computer scientists and engineers, and surgeons, interventional radiologists and radiation oncologists.

Thus CLIP 2012 provided a successful forum for the dissemination of emerging image-based clinical techniques. Specific topics included pre-interventional image segmentation and classification (to support diagnosis and clinical decision making), interventional and surgical planning and analysis of dynamic images, and evaluation, visualization and correction techniques for image-based procedures. Clinical applications covered the skull and the brain, cardiac defects, blood vessels, abdominal organs, and cancer in adults and children. The presentations and discussions around the meeting emphasized current challenges and emerging techniques in image-based procedures, strategies for clinical translation of image-based techniques, the role of computational anatomy and image analysis for surgical planning and interventions, and the contribution of medical image analysis to open and minimally invasive surgery. During two keynote sessions, clinical highlights were presented and discussed by Bradford Wood, MD from the National Institute of Health Clinical Center in USA (interventional oncology), and Renato Bale, MD from the Medical University Innsbruck in Austria (microinvasive therapy). We are grateful to our keynote speakers for their compelling presentations and vibrant participation in workshop discussions.

In response to the call for papers, 24 original manuscripts were submitted for presentation at CLIP 2012. Each of the manuscripts underwent a meticulous double-blind peer review by a minimum of two members of the Program Committee, all of them prestigious experts in the field of medical image analysis and clinical translations of technology. Sixty-six percent of the manuscripts (16 from 24) were accepted for oral presentation at the workshop. Contributors represented 11 countries from three continents: Europe, North America and Asia. The six papers with the highest review score were nominated to be considered as best papers. The three best papers were chosen by votes cast by workshop participants who had attended all six presentations of the nominated papers (workshop organizers excepted). As a result, three awards were presented. First place went to Silvain Bériault, Simon Drouin, Abbas F. Sadikot, Yiming Xiao, D. Louis Collins and G. Bruce Pike from McGill University in Montreal, QC, Canada, for their work in deep brain stimulation trajectory planning. Second place was presented to Carlos Sanchez-Mendoza, Nabile Safdar, Emmarie Myers, Tanakorn Kittisarapong, Gary Rogers and Marius George Linguraru from the Children's National Medical Center in Washington, DC, USA, for their contributions to the quantitative assessments of craniosynostosis in infants. Third place was conferred on Uroš Mitrović, Žiga Špiclin, Boštjan Likar and Franjo Pernuš from the University of Ljubljana in Slovenia for their advancements on contrast agent flow visualization in vascular images. We would like to congratulate warmly all the prize winners for their outstanding work and exciting presentations and thank our sponsors, EXOCAD and MedCom, for their support.

We would like to acknowledge the invaluable contributions of our entire Program Committee without whose assistance CLIP 2012 would not have been as successful and stimulating. Our thanks also go to all the authors in this volume for the high quality of their work and the commitment of time and effort. Finally, we are grateful to the MICCAI organizers, and particularly Xavier Pennec, Tobias Heimann, Kilian Pohl and Akinobu Shimizu, for supporting the organization of CLIP 2012.

January 2013

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