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Preface

Minimally invasive surgical interventions are one of the key drivers of the search for ways to use computer-based information technology to link preoperative planning and surgeon actions in the operating room. Computers, used in conjunction with advanced surgical assist devices, are influencing how procedures are currently performed.

Computer-assisted intervention (CAI) systems make it possible to carry out surgical interventions that are more precise and less invasive than conventional procedures, while recording all relevant data. This data logging, coupled with appropriate tracking of patient outcomes, is a key enabler for a new level of quantitative patient outcome assessment and treatment improvement. The goals of CAI systems are to enhance the dexterity, visual feedback, and information integration of the surgeon. While medical equipment is currently available to assist the surgeons in specific tasks, it is the synergy between these capabilities that gives rise to a new paradigm.

The Information Processing and Computer-Assisted Intervention (IPCAI) Conference was created as a forum to present the latest developments in CAI. The main technological focus is on patient-specific modeling and its use in interventions, image-guided and robotic surgery, real-time tracking and imaging. IPCAI aims at taking the particular aspects of interest and importance to CAI into account directly during the paper review process. IPCAI seeks papers presenting novel technical concepts, clinical needs and applications, as well as hardware, software, and systems and their validation.

The yearly IPCAI conferences were initiated in 2010 in Geneva, Switzerland, and the second in 2011 Berlin, Germany. This volume contains the proceedings of the Third IPCAI Conferencethat took place on June 27, 2012, in Pisa, Italy. This year, we received 31 full papers submissions, 15 from North America, 15 from Europe, and one from Asia. These submissions were reviewed by a total of 50 external reviewers, coordinated by 11 Program Committee members. A "primary" and "secondary" Program Committee member were assigned to each paper, and each paper received at least three external reviews. After the initial review process, the authors were given the opportunity to respond to the reviewers' and the Program Committee members' comments. Finally, an independent body of six Program Board members discussed all papers and a final decision was made, where 17 very high quality papers were accepted. The final submissions were re-reviewed by the Program Committee members to ensure that all reviewers' comments were addressed.

The format of the IPCAI conference allows more time for constructive discussion. In a departure from prior years, all authors of accepted papers were asked to give short five-minute platform presentations. These presentations were followed by two "interactive" poster sessions with organized discussion. Following

this initial interaction, the conference delegates voted for a list of papers where they were interested in a longer platform presentation. For these papers, at least 30 minutes were allocated for questions from the attendees and the committee members.

We would like to take this opportunity to thank our fellow Area Chairs: Hervé Delingette, INRIA, France; Gabor Fichtinger, Queen's, Canada; Makoto Hashizume, Fukuoka, Japan; Thomas Langø, SINTEF, Norway; Ken Mahsamune, Tokyo, Japan; Lena Meier-Hein, DKFZ, Germany; Parvin Mousavi, Queen's, Canada; Sebastien Ourselin, UCL, UK; Graeme Penney, King's College, UK; Ziv Yaniv, Children's Hospital, USA, and Guoyan Zheng, University of Bern, Switzerland; and Program Board Members: David Hawkes, UCL, UK; Kensaku Mori, Nagoya, Japan; Tim Salcudean, UBC, Canada; Gabor Szekely, ETH, Switzerland; Russell Taylor, JHU, USA, and Guang-Zhong Yang, ICL, UK.

We would also like to thank all the authors that submitted their papers to IPCAI and for their subsequent work in revising the papers for final publication.

March 2012

Purang Abolmaesumi
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