



Program IPCAI 2016 Heidelberg

Tuesday, June 21

- 15:00 – Opening of IPCAI 2016
- 15:05 – Calibration and Registration
- 15:45 – Registration II
- 16:30 – Break
- 16:45 – Mechanical Modelling and Intraoperative Sensing
- 17:25 – Poster Session
- 18:00 – IPCAI 2016 Poster / Social event

Wednesday, June 22

- 08:30 – Motion Modelling, Tracking and Robotics
- 09:05 – Surgical Workflows and Human Computer Interfaces
- 09:45 – Break
- 10:00 – Evaluation Studies
- 10:25 – Poster Session
- 12:00 – Lunch
- 13:30 – Long Oral Session I
- 15:00 – Break
- 15:15 – Long Oral Session II
- 16:45 – Presentation of Awards and Closing
- 17:30 – ISCAS/CARS Reception

Tuesday, June 21

15:00	Opening of IPCAI 2016 and Presentation of two awards: I. NDI / IPCAI - YOUNG INVESTIGATOR TRAVEL AWARD II. SIEMENS / IPCAI - BEST REVIEWER AWARDS
15:05	Short oral presentations I: Calibration and Registration Chair: Danail Stoyanov
CR-1	Guided Ultrasound Calibration Elvis C.S. Chen, Terry M. Peters, Burton Ma <i>Robarts Research Institute, London (Canada); York University, Toronto (Canada)</i>
CR-2	On Demand Calibration and Evaluation for Electromagnetically Tracked Laparoscope in Augmented Reality Visualization Xinyang Liu, William Plishker, George Zaki, Sukryool Kang, Timothy Kane, Raj Shekhar <i>Children's National Health System, Washington (USA), IGI Technologies Inc., Maryland (USA)</i>
CR-3	Spatial calibration of a 2D/3D ultrasound using a tracked needle Francisco Vasconcelos, Donald Peebles, Sebastien Ourselin, Danail Stoyanov <i>University College London (UK)</i>
CR-4	Hand-Eye calibration for Rigid Laparoscopes using an Invariant Point Stephen Thompson, Danail Stoyanov, Crispin Schneider, Kurinchi Gurusamy, Sebastien Ourselin, Brian Davidson, David Hawkes, Matthew Clarkson <i>University College London (UK)</i>
CR-5	Calibration of RGBD Camera and Cone-Beam CT for 3D Intra-operative Mixed Reality Visualization Sing Chun Lee, Bernhard Fuerst, Javad Fotouhi, Marius Fischer, Greg Osgood, Nassir Navab <i>Computer Aided Medical Procedures, Johns Hopkins University, Baltimore (USA), Trauma Surgery Department, Klinikum Innenstadt, LMU Munich (Germany), Orthopaedic Trauma, Department of Orthopaedic Surgery, Johns Hopkins Hospital, Baltimore (USA)</i>
CR-6	Estimating FLE_image of manual fiducial localization in CT images Zoltan Bardosi, Wolfgang Freysinger <i>Medizinische Universität Innsbruck (Austria)</i>
CR-7	Real-time 6DoF Pose Recovery from X-ray Images using Library-based DRR and Hybrid Optimization Shun Miao, Ahmet Tuysuzoglu, Z. Jane Wang, Rui Liao <i>Siemens Healthcare, New York (USA), University of British Columbia, Vancouver (Canada)</i>
15:45	Short Oral Presentations II: Registration II Chair: Lena Maier-Hein

R2-1	<p>Robust Augmented Reality Guidance with Fluorescent Markers in Laparoscopic Surgery</p> <p>Esther Wild, Dogu Teber, Daniel Schmid, Tobias Simpfendorfer, Michael Müller, Ann-Christin Baranski, Hannes Kenngott, Klaus Kopka, Lena Maier-Hein <i>Computer-assisted Interventions, German Cancer Research Center, Heidelberg (Germany), Department of Urology, University of Heidelberg (Germany), mbits imaging GmbH, Heidelberg (Germany), Division of Radiopharmaceutical Chemistry, German Cancer Research Center, Heidelberg (Germany), General, Visceral and Transplant Surgery, University of Heidelberg (Germany)</i></p>
R2-2	<p>miLBP: A robust and fast modality-independent 3D LBP for multimodal deformable registration</p> <p>Dongsheng Jiang, Yonghong Shi, Manning Wang, Zhijian Song, Demin Yao <i>Digital Medical Research Center of School of Basic Medical Sciences, Fudan University, Shanghai (China)</i></p>
R2-3	<p>Registration of a statistical model to intraoperative ultrasound for scaphoid screw fixation</p> <p>Emran Mohammad Abu Anas, Alexander Seitel, Abtin Rasoulian, Paul John, Tamas Ungi, Andras Lasso, Kathryn Darras, David Wilson, Victoria Lessoway, Gabor Fichtinger, Michelle Zec, David Pichora, Parvin Mousavi, Robert Rohling, Purang Abolmaesumi <i>Dept. Electrical and Computer Engineering, University of British Columbia, Vancouver, Kingston General Hospital, School of Computing, Queen's University, Kingston, Vancouver General Hospital, Dept. Orthopaedics and Centre for Hip Health and Mobility and Dept. Electrical and Computer Engineering, University of British Columbia, Vancouver, BC Women's Hospital, Vancouver (Canada)</i></p>
R2-4	<p>Joint Registration of Ultrasound, CT and a Shape+Pose Statistical Model of the Lumbar Spine for Guiding Anesthesia</p> <p>Delaram Behnami, Alexander Seitel, Abtin Rasoulian, Emran Mohammad Abu Anas, Victoria Lessoway, Jill Osborn, Robert Rohling, Purang Abolmaesumi <i>Dept. Electrical and Computer Engineering, University of British Columbia, Vancouver, BC Women's Hospital, Vancouver, Providence Health Care, Vancouver (Canada)</i></p>
R2-5	<p>Deformable registration of Trans Rectal Ultrasound (TRUS) and Magnetic Resonance Imaging (MRI) for focal prostate brachytherapy</p> <p>Arnaldo Mayer, Adi Zholkover, Orith Portnoy, Gil Raviv, Eli Konen, Zvi Symon <i>Sheba Medical Center, Ramat-Gan (Israel)</i></p>
R2-6	<p>Vessel-based brain-shift compensation using elastic registration driven by a patient-specific finite element model</p> <p>Fanny Morin, Ingerid Reinertsen, Hadrien Courtecuisse, Olivier Palombi, Bodil Munkvold, Hans Kristian Bø, Yohan Payan, Matthieu Chabanas <i>TIMC-IMAG, Univ. Grenoble Alpes (France), SINTEF, Trondheim (Norway), AVR-iCube, Univ. Strasbourg (France), Dept. of Neurosurgery, Grenoble University Hospital (France), Dept. of Neurosurgery, St. Olavs University Hospital, Trondheim, (Norway)</i></p>

R2-7	<p>Vessel-based Registration of an Optical Shape Sensing Catheter for MR Navigation</p> <p>Samuel Kadoury, Koushik Mandal, Francois Parent, Sylvain Martel, Raman Kashyap <i>Dept. Computer and Software Engineering, Dept. Physics Engineering, Ecole Polytechnique de Montreal (Canada)</i></p>
R2-8	<p>Retinal Slit Lamp Video Mosaicking</p> <p>Sandro De Zanet, Tobias Rudolph, Rogerio Richa, Seecrypt, Christoph Tappeiner, Raphael Sznitman <i>ARTORG Research Center Biomedical Engineering Research, University of Bern (Switzerland), Centurion (South Africa), Dept. Ophthalmology, Inselspital Bern (Switzerland)</i></p>
16:30	Coffee Break
16:45	<p>Short Oral Presentations III: Mechanical Modelling and Intraoperative Sensing</p> <p>Chair: Amber L. Simpson</p>
MMIS-1	<p>Patient-Individualized Boundary Conditions for CFD Simulations Using Time-Resolved 3D Angiography</p> <p>Marco Boegel, Sonja Gehrisch, Thomas Redel, Christopher Rohkohl, Philip Hoelter, Arnd Doerfler, Andreas Maier, Markus Kowarschik <i>Pattern Recognition Lab, Dept. Computer Science, Friedrich-Alexander Universität, Erlangen (Germany), Siemens Healthcare GmbH, Forchheim (Germany), Dept. Neuroradiology, Universitätsklinikum Erlangen (Germany)</i></p>
MMIS-2	<p>Soft tissue deformation for surgical simulation: a position-based dynamics approach</p> <p>Mafalda Camara, Erik Mayer, Ara Darzi, Philip Pratt <i>Department of Surgery and Cancer, Imperial College London (UK)</i></p>
MMIS-3	<p>Comprehensive patient-specific information preprocessing for cardiac surgery simulations</p> <p>Nicolai Schoch, Fabian Kißler, Markus Stoll, Sandy Engelhardt, Raffaele de Simone, Ivo Wolf, Rolf Bendl, Vincent Heuveline <i>Engineering Mathematics and Computing Lab (EMCL), Heidelberg University, German Cancer Research Center, Heidelberg, Universitätsklinikum Heidelberg, Hochschule Mannheim, Hochschule Heilbronn(Germany)</i></p>
MMIS-4	<p>Robust Near Real-Time Estimation of Physiological Parameters from Megapixel Multispectral Images with Inverse Monte Carlo and Random Forest Regression</p> <p>Sebastian Josef Wirkert, Hannes Kenngott, Benjamin Mayer, Peter Sauer, Neil T. Clancy, Dan Elson, Lena Maier-Hein <i>Computer-Assisted Interventions, German Cancer Research Center, Heidelberg, Dept. General, Visceral and Transplantation Surgery, Heidelberg University Hospital, Dept.</i></p>

	<i>Gastroenterology, University of Heidelberg (Germany), Hamlyn Centre for Robotic Surgery, Institute of Global Health Innovation, Imperial College London (UK)</i>
MMIS-5	Vision-based Deformation Recovery for Intraoperative Force Estimation of Tool-Tissue Interaction for Neurosurgery Stamatia Giannarou, Menglong Ye, Gauthier Gras, Konrad Leibrandt, Hani Marcus, Guang-Zhong Yang <i>Hamlyn Centre for Robotic Surgery, Imperial College London (UK)</i>
MMIS-6	Single-View X-Ray Depth Recovery Shadi Albarqouni, Ulrich Konrad, Lichao Wang, Nassir Navab, Stefanie Demirci <i>Chair for Computer Aided Medical Procedure (CAMP), Technische Universität München, Munich (Germany)</i>
MMIS-7	Automatic assessment of time-resolved OCT images for Selective Retina Therapy treatment feedback Sarah Zbinden, Serife Seda Kucur, Patrick Steiner, Sebastien Wolf, Raphael Sznitman <i>ARTORG Center, University of Bern, Dept. Ophthalmology, Inselspital, Bern (Switzerland)</i>
17:25	Poster Session
18:00	IPCAI 2016 Poster / Social event
Wednesday, June 22	
08:30	Short Oral Presentations IV: Motion Modelling, Tracking and Robotics Chair: Stefanie Speidel
MMTR-1	Context Region Discovery for Automatic Motion Compensation in Fluoroscopy Yin Xia, Sarfaraz Hussein, Vivek Singh, Matthias John, Ying Wu, Terence Chen <i>Northwestern University, Evanston, University of Central Florida, Siemens Corporate Research, Princeton (USA), Siemens AG, Healthcare Sector, Nürnberg (Germany)</i>
MMTR-2	In-vivo Validation of Liver Motion Prediction for Focused Ultrasound Therapy based on MR-Tracking Christine Tanner, Yuval Zur, Karen French, Golnoosh Samei, Jan Strehlow, Giora Sat, Helen McLeod, Graeme Houston, Sebastian Kozerke, Gabor Szekely, Andreas Melzer, Tobias Preusser <i>Computer Vision Laboratory, ETH Zürich (Switzerland), GE Medical Systems Israel, Haifa (Israel), Inst. Medical Science and Technology, University of Dundee, Scotland (UK), Inst. Medical Image Computing, Fraunhofer MEVIS, Bremen (Germany), School of Medicine, University of Dundee, Dundee, Scotland (UK), Jacobs University Bremen (Germany)</i>
MMTR-3	Combined 2D & 3D tracking of surgical instruments for minimally invasive and robotic assisted surgery

	Xiaofei Du, Maximilian Allan, Alessio Dore, Sebastien Ourselin, David Hawkes, John D. Kelly, Danail Stoyanov <i>Centre for Medical Image Computing, University College London (UK), WIREWAX, London (UK)</i>
MMTR-4	Spectral Analysis of the Tremor Motion for Needle Detection in Curvilinear Ultrasound via Spatio-temporal Linear Sampling Parmida Beigi, Robert Rohling, Septimiu Salcudean, Gary Ng <i>Electrical and Computer Engineering Dept., University of British Columbia, Vancouver (Canada), Philips Ultrasound, Bothell (USA)</i>
MMTR-5	Prostate biopsies assisted by comanipulater probe-holder: first in Man Marie-Aude Vitrani, Michael Baumann, David Reversat, Guillaume Morel, Alexandre Moreau-Gaudry, Pierre Mozer <i>Sorbonne Universités UPMC, Paris, Koelis Inc., Meylan, Laboratory of Techniques for biomedical engineering and complexity management informatics, mathematics and applications, University Grenoble Alpes, Grenoble (France)</i>
MMTR-6	Dual-Robot Ultrasound-Guided Needle Placement: Closing the Planning-Imaging-Action Loop Risto Kojcev, Bernhard Fuerst, Oliver Zettinig, Javad Fotouhi, Sing Chun Lee, Russell Taylor, Edoardo Sinibaldi, Nassir Navab <i>Computer Aided Medical Procedures, Johns Hopkins University, Baltimore (USA), Center for Micro-BioRobotics, Istituto Italiano di Tecnologia, Pontedera (Italy), Computer Aided Medical Procedures, Technische Universität München (Germany), Laboratory of Computational Sensing and Robotics, Johns Hopkins University, Baltimore (USA)</i>
09:05	Short Oral Presentations V: Surgical Workflows and Human Computer Interfaces Chair: Nicolas Padoy
SWHCI-1	Automatic Data-Driven Real-Time Segmentation and Recognition of Surgical Workflow Olga Dergachyova, David Bouget, Arnaud Hualmé, Xavier Morandi, Pierre Jannin <i>INSERM, Rennes, CHU Rennes, Dept. Neurochirurgie, Rennes (France)</i>
SWHCI-2	System Events: readily accessible features for surgical phase detection Anand Malpani, Colin Lea, Chi Chiung Grace Chen, Gregory Hager <i>Johns Hopkins University Whiting School of Engineering, Johns Hopkins University School of Medicine, Baltimore (USA)</i>
SWHCI-3	Query-by-example surgical activity detection Yixin Gao, S. Swaroop Vedula, Gyusung I. Lee, Mija R. Lee, Sanjeev Khudanpur, Gregory D. Hager <i>Dept. Computer Science, Whiting School of Engineering, The Johns Hopkins University, Dept. Surgery, Johns Hopkins University School of Medicine, Dept. Electrical and Computer Engineering, Whiting School of Engineering, The Johns Hopkins University,</i>

	Baltimore (USA)
SWHCI-4	<p>Bridging the Gap between Formal and Experience-Based Knowledge for Context-Aware Laparoscopy</p> <p>Darko Katic, Jürgen Schuck, Anna-Laura Wekerle, Hannes Kenngott, Beat Peter Müller-Stich, Rüdiger Dillmann, Stefanie Speidel</p> <p><i>Inst. Anthropomatics and Robotics (IAR), Karlsruhe Institute of Technology, Dept. General, Abdominal and Transplantation Surgery, University of Heidelberg, Inst. Anthropomatics and Robotics (IAR), Karlsruhe Institute of Technology (Germany)</i></p>
SWHCI-5	<p>Device and System Independent Personal Touchless User Interface for Operating Rooms</p> <p>Meng Ma, Pascal Fallavollita, Severine Habert, Simon Weidert, Nassir Navab</p> <p><i>Technische Universität München, Chirurgischen Klinik und Poliklinik, München (Germany)</i></p>
SWHCI-6	<p>A Wearable Navigation Display can Improve Attention to the Surgical Field</p> <p>James Stewart, Mark Billingham</p> <p><i>Queen's University, Kingston (Canada), HITLab NZ, Canterbury (New Zealand)</i></p>
SWHCI-7	<p>Pre-Clinical Usability Study of Multiple Augmented Reality Concepts for K-Wire Placement</p> <p>Marius Fischer, Bernhard Fuerst, Sing Chun Lee, Javad Fotouhi, Severine Habert, Simon Weidert, Greg Osgood, Nassir Navab</p> <p><i>Trauma Surgery Department, Munich (Germany), Computer Aided Medical Procedures, Johns Hopkins University, Baltimore (USA), Computer Aided Medical Procedures, Technische Universität München (Germany), Orthopaedic Trauma, Dept. Orthopaedic Surgery, Johns Hopkins Hospital, Baltimore (USA)</i></p>
09:45	Coffee Break
10:00	<p>Short Oral Presentations VI: Evaluation Studies</p> <p>Chair: Frank Lindseth</p>
ES-1	<p>Three-dimensional quantitative assessment of ablation margins based on registration of pre- and post-procedural MRI and distance map</p> <p>Soichiro Tani, Servet Tatli, Xavier Garcia-Rojas, Olutayo Olubiyi, Nobuhiko Hata, Stuart Silverman, Junichi Tokuda</p> <p><i>Dept. Radiology, Brigham and Women's Hospital and Harvard Medical School, Boston, Texas Medical Center, Houston (USA)</i></p>
ES-2	<p>Intraoperative application of handheld structured light scanning - a feasibility study</p> <p>Brandon Chan, Jason Auyeung, John F Rudan, Randy E Ellis, Manuela Kunz</p> <p><i>School of Computing, Queen's University, Dept. Biomedical and Molecular Sciences, Queen's University, Dept. Surgery, Queen's University, Kingston General Hospital, Dept. Mechanical and Materials Engineering, Queen's University, Kingston (Canada)</i></p>

ES-3	<p>Catheter manipulation analysis for assessing performance and technical skills in conventional and robotic TAVI surgery</p> <p>Evangelos Mazomenos, Ping-Lin Chang, Radoslaw Rippel, Alexander Rolls, David Hawkes, Colin Bicknell, Adrien Desjardins, Celia Riga, Danail Stoyanov</p> <p><i>Centre for Medical Image Computing and Dept. Computer Science, University College London (UK), Division of Surgery, Dept. Surgery and Cancer, Imperial College London (UK), Dept. Medical Physics and Bioengineering, University College London (UK)</i></p>
ES-4	<p>Detection of Prostate Cancer Using Temporal Sequences of Ultrasound Data: A Large Clinical Feasibility Study</p> <p>Shekoofeh Azizi, Farhad Imani, Sahar Ghavidel, Amir Tahmasebi, Jin Tae Kwak, Sheng Xu, Baris Turkbey, Peter Choyke, Peter Pinto, Bradford Wood, Parvin Mousavi, Purang Abolmaesumi</p> <p><i>Dept. Electrical and Computer Engineering, The University of British Columbia, Vancouver (Canada), Queen's School of Computing, Queen's University, Kingston (Canada), Philips, New York (USA), National Institutes of Health, Bethesda (USA)</i></p>
10:25	Poster session
13:30	Long Oral Session I, Chair: Ziv Yaniv / Thomas Langø
15:00	Coffee Break
15:15	Long Oral Presentations II, Chair: Ziv Yaniv / Thomas Langø
16:45	<p>Presentation of two awards:</p> <p>I. PHILIPS / IPCAI - BEST PAPER AWARD</p> <p>II. OLYMPUS / IPCAI - BENCH TO BEDSIDE AWARD</p> <p>Closing of IPCAI 2016 – Presentation of IPCAI 2017</p>
17:30	ISCAS / CARS Reception

