



IPCAI 2018, 20-21 June, Berlin, Germany

Program

Wednesday, June 20	Thursday, June 21
08:30 – Opening of IPCAI 2018	08:00 – Plenary Discussion
08:40 – Preoperative Planning and Simulation	08:30 – Selected Oral Presentations I
09:20 – Interventional Ultrasound	10:10 – Coffee Break
10:10 – Coffee Break	10:40 – Selected Oral Presentations II
10:40 – Intraoperative Navigation and Registration	12:20 – IPCAI Awards II and Closing
11:20 – Image Processing and Instrumentation for CAI	13:00 – IPCAI End of 2 nd Day
12:00 – Luncheon Poster Session I	
13:45 – Endoscopy and Surgical Training	
14:30 – Medical Robotics	
15:20 – IPCAI Awards I	
15:30 – Coffee Poster Session II	
17:30 – IPCAI End of 1 st Day	

Wednesday, June 20	
08:30	Opening of IPCAI 2018 Chairs: Pascal Fallavollita, Etsuko Kobayashi, Stefanie Speidel
08:40	Short Presentations I: Preoperative Planning and Simulation Chair: Caroline Essert
PS-1	Planning nonlinear Access Paths for Temporal Bone Surgery J. Fauser, G. Sakas, A. Mukhopadhyay <i>Technical University Darmstadt (D)</i>
PS-2	A Novel Technology for 3D Knee Prosthesis Planning and Treatment Evaluation using 2D X-ray Radiographs G. Zheng, H. Hommel, A. Akcoltekin, B. Thelen, G. Peersman <i>University of Bern (CH), Hospital Maerkisch Oderland GmbH (D), KU Leuven (B)</i>
PS-3	A Pre-Operative Planning Framework for Global Registration of Laparoscopic Ultrasound to CT images J. Ramalhinho, M. Robu, S. Thompson, K. Gurusamy, B. Davidson, D. Hawkes, M. Clarkson <i>University College London (UK)</i>
PS-4	IMHOTEP - Virtual Reality Framework for Surgical Applications M. Pfeiffer, H. Kenngott, A. Preukschas, M. Huber, L. Bettscheider, B. Mueller-Stich, S. Speidel <i>National Center for Tumor Diseases Dresden (D), University Hospital Heidelberg (D)</i>
PS-5	Patient Specific Catheter Shaping for the Minimally Invasive Closure of the Left Atrial Appendage E. Graf, I. Ott, J. Praceus, F. Bourier, T. Lüth <i>Technical University of Munich (D), German Heart Center Munich (D)</i>
PS-6	FEM Based Elasticity Reconstruction Using Ultrasound For Imaging Tissue Ablation C. Ottesteanu, V. Vishnevskiy, O. Goksel <i>ETH Zurich (CH)</i>
09:20	Short Presentations II: Interventional Ultrasound Chair: Christoph Hennersperger
US-1	High Dynamic Range Ultrasound Imaging

	A. Degirmenci, D. Perrin, R. Howe <i>Harvard University (US), Children's Hospital Boston (US)</i>
US-2	Determination of Optimal Ultrasound Planes for the Initialisation of Image Registration during Endoscopic Ultrasound-guided Procedures E. Bonmati, Y. Hu, E. Gibson, L. Uribarri, G. Keane, K. Gurusamy, B. Davidson, S. Pereira, M. Clarkson, D. Barratt <i>University College London (UK)</i>
US-3	Segmentation of Prostate in Transrectal Ultrasound Guided by Prior from Magnetic Resonance Imaging Q. Zeng, G. Samei, D. Karimi, C. Kesch, S. Mahdavi, P. Abolmaesumi, T. Salcudean <i>University of British Columbia (CA), British Columbia Cancer Agency (CA)</i>
US-4	Registration of 3D Freehand Ultrasound to a Bone Model for Orthopaedic Procedures of the Forearm M. Ciganovic, F. Ozdemir, F. Péan, P. FÜRnstahl, C. Tanner, O. Goksel <i>ETH Zurich (CH), University of Zurich (CH)</i>
US-5	Convolution Neural Networks for Real-Time Needle Detection and Localization in 2D Ultrasound C. Mwikirize, J. Noshier, I. Hacihaliloglu <i>Rutgers University (US)</i>
US-6	Automatic intraoperative estimation of blood flow direction during neurosurgical interventions D. Iversen, L. Løvstakken, G. Unsgård, I. Reinertsen <i>Norwegian University for Science and Technology (N), SINTEF (N), St. Olav University Hospital (N)</i>
US-7	SUPRA: Open Source Software Defined Ultrasound Processing for Real-Time Applications R. Göbl, C. Hennersperger, N Navab <i>Technical University Munich (D), Johns Hopkins University (US)</i>
US-8	Ultrasound thermal monitoring with an external ultrasound source for customized bipolar RF ablation shapes Y. Kim, Chloe Audigier, J. Ziegele, M. Friebe, E. Boctor <i>Johns Hopkins University (US), Otto-von-Guericke University Magdeburg (D)</i>
10:10	Coffee Break

10:40	Short Presentations III: Intraoperative Navigation and Registration Chair: Elvis Chen
NR-1	Biomechanics-based graph matching method for CT-CBCT fusion J.G. Guevara, I. Peterlik, M.O. Berger, S. Cotin <i>INRIA Strasbourg (F), INRIA Nancy (F)</i>
NR-2	Automatic Global Rigid Registration of CT to Video in Laparoscopic Liver Surgery M.R. Robu, J. Ramalhinho, S. Thompson, K. Gurusamy, B. Davidson, D. Hawkes, D. Stoyanov, M.J. Clarkson <i>University College London (UK)</i>
NR-3	Supervised reinforcement learning for model to image registration in cardiac procedures D. Toth, S. Miao, T. Kurzendorfer, C. A. Rinaldi, R. Liao, T. Mansi, K. Rhode, P. Mounthey <i>Siemens Healthineers (UK), Siemens Healthineers, Medical Imaging Technologies (USA), Siemens Healthineers, Forchheim(D), NHS Foundation Trust (UK), King's College London (UK)</i>
NR-4	Fast 5DOF Needle Tracking in iOCT M. Zhou, M. Hamad, J. Weiss, A. Eslami, K. Huang, M. Maier, C.P. Lohmann, A. Knoll, M. A. Nasser, I. <i>Technical University of Munich (D), Carl Zeiss Meditec (D), Sun Yat-Sen University (CN)</i>
NR-5	Robust Navigation Support in Lowest Dose Image Setting M. Bui, F. Bourier, C. Baur, F. Milletari, N. Navab, S. Demirci <i>Technical University of Munich (D), German Heart Center Munich (D)</i>
NR-6	In-Vivo Estimation of Target Registration Errors During Augmented Reality Laparoscopic Surgery S. Thompson, C. Schneider, M. Bosi, K. Gurusamy, S. Ourselin, B. Davidson, D. Hawkes, Matthew, J. Clarkson <i>University College London (UK)</i>
11:20	Short Presentations IV: Image Processing and Instrumentation for CAI Chair: Stefanie Demirci
IPI-1	Automatic Segmentation of Stereoelectroencephalography (SEEG) Electrodes Post-Implantation considering Bending

	A. Granados, V. Vakharia, R. Radionov, M. Schweiger, S. B. Vo, O'Keeffe, K. Li, A. Miserocchi, A. McEvoy, M. J. Clarkson, J. Duncan, R. Sparks, S. Ourselin <i>University College London Hospitals NHS (UK), University College London (UK)</i>
IPI-2	A Photon Recycling Approach to Denoising of Ultra-low Dose X-ray Sequences S. Hariharan, N. Strobel, M. Kowarschik, S. Demirci, S. Albarqouni, R. Fahrig, N. Navab <i>Technical University of Munich (D), University of Applied Sciences Wuerzburg-Schweinfurt (D), Siemens Healthineers (D), Johns Hopkins University (US)</i>
IPI-3	Effective deep learning training for single-image super-resolution in endomicroscopy exploiting video-registration-based reconstruction D. Ravi, A.Szczotka, D.Shakir, S.Pereira, T. Vercauteren <i>University College London (UK)</i>
IPI-4	RF - ablation pattern shaping employing switching channels of dual bipolar needle electrodes - in-vitro results J. Ziegler, C. Audigier, J. Krug, G. Ali, Y. Kim, E. Boctor, M. Friebe <i>Otto-von-Guericke University Magdeburg (D), Johns Hopkins University (US)</i>
IPI-5	Motion-invariant SRT treatment detection from direct M-scan OCT imaging T. Fountoukidou, P. Raisin, D. Kaufmann, J. Justiz, R.Sznitman, S. Wolf <i>University of Bern (CH), Bern University of Applied Sciences (CH), Inselspital University Hospital (CH)</i>
IPI-6	LV Function Validation of Computer-Assisted Interventional System for Cardiac Resynchronization Therapy M. Panayiotou, R. Housden, Athanasios Ishak, A. Brost, C. Rinaldi, B. Sieniewicz, J. Behar, T. Kurzendorfer, K. Rhode <i>Siemens Healthineers (D), King's College London (UK)</i>
12:00	Luncheon Poster Session I & Interactive Brain Writing
13:45	Short Presentations V: Endoscopy and Surgical Training Chair: Raphael Sznitman
ET-1	Retrieval and Registration of Long-Range Overlapping Frames for Scalable Mosaicking of In Vivo Fetoscopy L. Peter, M. Tella-Amo, D.I. Shakir, G. Attilakos, R. Wimalasundera, J. Deprest, S. Ourselin, T. Vercauteren <i>University College London (UK), KU Leuven (BE), University College Hospital (UK)</i>
ET-2	

	Trackerless Panoramic Optoacoustic Imaging - Is it feasible? S. Nitkunanantharajah, C. Hennemersperger, X. L. Dean-Ben, D. Razansky, N. Navab <i>Technical University of Munich (D), Helmholtz Center Munich (D), Johns Hopkins University (US)</i>
ET-3	Exploiting the potential of unlabeled endoscopic video data with self-supervised learning T. Ross, D. Zimmerer, A. Vemuri, F. Isensee, S. Bodenstedt, F. Both, P. Kessler, M. Wagner, B. Muller, H. Kenngott, S. Speidel, K. Maier-Hein, L. Maier-Hein <i>German Cancer Research Center (D), National Center for Tumor Diseases Dresden (D), University of Heidelberg (D), understand.ai (D)</i>
ET-4	Context Aware Decision Support in Neurosurgical Oncology based on an Efficient Classification of Endomicroscopic Data Y. Li, P. Charalampaki, Y. Liu, G.-Z. Yang, S. Giannarou <i>Imperial College London (UK), Zhejiang University (CN), Cologne Medical Center (D), Heinrich Heine University Duesseldorf (D)</i>
ET-5	Surgical skills: Can learning curves be computed from recordings of surgical activities? G. Forestier, L. Riffaud, F. Petitjean, P. L. Henaux, P. Jannin, <i>University of Haute-Alsace (F), Pontchaillou University Hospital (F), Monash University (AU), University of Rennes (F)</i>
ET-6	Automated Surgical Skill Assessment in RMIS Training A. Zia, I. Essa <i>Georgia Institute of Technology (US)</i>
14:30	Short Presentations VI: Medical Robotics Chair: Siyang Zuo
MD-1	Learning-Based Endovascular Navigation Through the Use of Non-Rigid Registration for Collaborative Robotic Catheterization W. Chi, J. Liu, H. Rafii-Tari, C. Riga, C. Bicknell, G-Z. Yang <i>Imperial College London (UK)</i>
MD-2	Precisely positioning the tip of an instrument inserted through an orifice with a free wrist robot. E. Flouty, O. Zisimopoulos, P. Giataganas, J. Nehme, A. Chow, D. Stoyanov <i>Touch Surgery (UK), University College London (UK)</i>
MD-3	Experimental Validation of Robot-assisted Cardiovascular Catheterization: Model-based versus Model-free Control

	X. Wang, D. Fu, Z. Dong, K-H. Lee, K. Wang, G. Fang, S-L. Lee, A. Lee, K-W. Kwok <i>The University of Hong Kong (CN), Imperial College (UK), The Chinese University of Hong Kong (CN)</i>
MD-4	Robotic ultrasound-guided facet joint insertion - Can we replace X-ray Fluoroscopy? J. Esteban, S. Witzig, W. Simpson IV, S. Virga, O. Zettinig; B. Frisch, A. Riennmuller, D. Sakara, Y-M. Ryang, N. Navab, C. Hennemersberger <i>Technical University of Munich (D), Imfusion GmbH (D), Medidee Services SA (CH), Klinikum Rechts der Isar (D), Johns Hopkins University (US), Trinity College Dublin (UK)</i>
MD-5	A cable-driven parallel manipulator with force sensing capabilities for high-accuracy tissue endomicroscopy K. Miyashita, T. Vrieling, G. Mylonas <i>Imperial College London (UK)</i>
MD-6	Use the Force: Deformation Correction in Robotic 3D Ultrasound S. Virga, R. Gobl, M. Baust, N. Navab, C. Hennemersberger <i>Technical University of Munich (D), Johns Hopkins University (US), Trinity College Dublin (UK)</i>
MD-7	A Linear Stepping Endovascular Intervention Robot with Variable Stiffness and Force Sensing C. He, S. Wang, S. Zuo <i>Tianjin University (CN)</i>
MD-8	Blended Shared Control Utilizing Online Identification T. Stephens, R. Dockter, J. O'Neill, T. Kowaleski <i>University College London (UK), University Of Minnesota (USA)</i>
15:20	IPCAI Awards I
15:30	Coffee Poster Session II & Interactive Brain Writing
17:30	IPCAI End of 1st Day

Thursday, June 21	
08:00	Plenary Discussion (Brain Writing Questions)
08:30	Selected Oral Presentations I: Preoperative Planning and Simulation & Interventional Ultrasound & Intraoperative Navigation and Registration Chairs: Stamatia Giannarou, Christian Linte
10:10	Coffee Break
10:40	Selected Oral Presentations II: Image Processing and Instrumentation for CAI & Endoscopy and Surgical Training & Medical Robotics Chairs: Amber Simpson, Chee-Kong Chui
12:20	IPCAI Awards II and Closing Chairs: Pascal Fallavollita, Etsuko Kobayashi, Stefanie Speidel
13:00	IPCAI End of 2nd Day