**Session 5**

13:30-15:45  
Third Oral Session

- Determination of Pelvic Orientation from Ultrasound Images Using Patch-SSMs and a Hierarchical Speed of Sound Compensation Strategy  
  Steffen Schumann, Marc Puls, Timo Ecker, Tobias Schlaeegli, Jan Sfferer, Klaus-A. Siebenrock, Guoyan Zheng

- Ultrasound Servoing of Catheters for Beating Heart Valve Repair  
  Samuel Kesner, Shellen Yuen, Robert Howe

- Towards a verified simulation model for radio-frequency ablations  
  Andreas Weihusen, Lisa Hinrichsen, Thomas Carus, Rainer Damm, Richard Rascher-Friesenhausen, Tim Kroeger, Heinz-Otto Pflaum, Tobias Feuerstein

- Early clinical evaluation of a computer assisted planning system for deep brain surgeries: 1 year of clinical assistance  
  Pierre-Francois O’Haee, Sivathan Paliyaram, Rui Li, Todd Shanks, Peter Zahos, Joseph Neimat, Peter Konrad, Benoit Dawant

15:45-16:00  
Coffee Break

16:00-17:00  
Interactive Poster Session

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**IPCAI 2010**

IPCAI 2010, the 1st International Conference on Information Processing in Computer-Assisted Interventions, will be held on June 23 in Geneva, Switzerland (co-located with CARS). Based on a highly selective double anonymous review process, IPCAI is aiming at organizing an event in which the best conference articles in computer assisted interventions are reviewed, selected, presented, and actively discussed.

**Venue**

IPCAI 2010 will be co-located with CARS 2010 at the University Medical Center in Geneva, Switzerland, one of the leading cities in health care.

**Executive Committee**

- Nassir Navab, CAMP/TU Munich, Germany
- Russell Taylor, JHU, USA
- Kensaku Mori, Nagoya University, Japan
- Pierre Jannin, INRIA/INSERM, Rennes, France and MNI-McGill, Montreal, Canada
- Leo Joskowicz, Hebrew University, Israel
- Dave Hawkes, UCL, UK

**Organization**

- Martin Groher, CAMP/TU Munich, Germany
- Martin Horn, CAMP/TU Munich, Germany
- Marco Feuerstein, Nagoya University, Japan
Program

8:30-8:35 Opening statements

Session 1
8:35-8:55 First set of short 5 minutes presentations
- Visualization and Planning of Neurosurgical Interventions with Straight Access
  Nikhil Navkar, Nikos Tsekos, Jason Stafford, Jeffrey Weinberg, Zhigang Deng
- Active Multispectral Illumination and Image Fusion for Retinal Microsurgery
  Raphael Sznitman, Seth Billings, Diego Rother, Daniel Mineta, Y. Yang, Jim Handa, Peter Gehlbach, Jim Kang, Gregory Hager, Russell Taylor
- An iterative framework for improving the accuracy of intraoperative intensity-based 2D/3D registration for image-guided orthopedic surgery
  Yoshito Otake, Mehran Armand, Ofri Sadowsky, Robert Amriger, Peter Kazanzides, Russell Taylor
- Automatic phases recognition in pituitary surgeries by microscope images classification
  Florent Lalys, Laurent Riffaud, Xavier Morandi, Pierre Jannin

Session 2
8:55-10:05 First Oral Session
- C-arm tracking by intensity-based registration of a fiducial
  Pascal FALLAVOLITA, Parang Abolmaesumi, Clif Burdette, Danny Song, Gabor Fichtinger
- First Animal Cadaver Study for Interlocking of Intramedullary Nails under Camera Augmented Mobile C-arm: A Surgical Workflow Based Preclinical Evaluation
  Leijing Wang, Juergen Landes, Simon Wiedert, Tobias Blum, Anna von der Heide, Ekkehard Euler, Nassir Navab

10:05-10:20 Coffee Break

Session 3
10:20-10:45 Second set of short 5 minutes presentations
- Robot-Assisted Laparoscopic Ultrasound
  Caitlin Schneider, Gregory Dachs, Christopher Hasser, Michael Choti, Simon DiMaio, Russell Taylor
- New Kinematic Metric for Quantifying Surgical Skill For Flexible Instrument Manipulation
  Jagadeesan Jayender, Raul San Jose Estepar, Kirby Vosburgh
- GPU-Accelerated Robotic Intra-Operative Laparoscopic 3D Reconstruction
  Markus Moll, Hsiao-Wei Tang, Luc Van Gool
- A Minimally Invasive Multimodality Image-Guided (MIMIG) Molecular Imaging System for Peripheral Lung Cancer Intervention and Diagnosis
  Tran Chiang He, Zhong Xue, Kelvin K. Wong, Miguel Vasileiva y Arrebola, Yong Zhang, Weimin Xie, Stephen T.C. Wong
- Simulating Dynamic Ultrasound using MR-derived Motion Models to assess Respiratory Synchronisation for Image-Guided Liver Interventions
  Erik-Jan Rijkenhorst, Daniel Heanes, Freddy O'dille, David Hawkes, Dean Bartlett

Session 4
10:45-12:30 Second Oral Session
- Rapid Image Registration of Three-dimensional Trans-esophageal Echocardiography and X-ray Fluoroscopy for the Guidance of Cardiac Interventions
  Gang Gao, Graeme Penney, Nicolas Gogin, Pascal Cathier, Aruna Arujuna, Matt Wright, Dennis Caufield, Aldo Rinaldi, Reza Rezavi, Kweil Rhode
- Patient Specific Modeling and Analysis of the Mitral Valve using 3D-TEE
  Philippe Burlina, Chad Sposone, Daniel Defenth, Anne Jnirsted, Ray Jiang, Francisco Cortijoch, Theodore Abraham, David Yuh, Elie McInteagh
- Evaluation of a 4D Cone-Beam CT Reconstruction Approach using an Anthropomorphic Phantom
  Zhi Yan, Jan Boese, Manly Samianto, Kevin Cleary

12:30-13:30 Lunch
IPCAI 2010, the 1st International Conference on Information Processing in Computer-Assisted Interventions is based on a highly selective anonymous review process. IPCAI aims at organizing an event in which the best conference articles in computer assisted interventions are reviewed, selected, presented, and actively discussed. It consists in long talks with almost unlimited time for discussions with questions prepared by committee members in a constructive and interactive friendly atmosphere. It is fully dedicated to Computer Assisted Interventions with different points of view: methodological and/or technical innovation, validation, clinical evaluation, system integration, and ergonomics. Papers will be published in LNCS Springer proceedings. More info at http://www.ipcai.org

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8:30-8:35 Opening Statements
8:35-8:55 First set of short 5 minutes presentations

**Visualization and Planning of Neurosurgical Interventions with Straight Access**
Nikhil Navkar¹, Nikos Tsekos¹, Jason Stafford², Jeffrey Weinberg², Zhigang Deng¹

¹ University of Houston, Houston, TX
² University of Texas, MD Anderson Cancer Center, Houston TX

**Active Multispectral Illumination and Image Fusion for Retinal Microsurgery**
Raphael Sznitman³, Seth Billings¹, Diego Rother¹, Daniel Mirot¹, Yi Yang¹, Jim Handa², Peter Gehlbach², Jim Kang³, Gregory Hager³, Russell Taylor¹

¹ Johns Hopkins University
² Johns Hopkins University, The Johns Hopkins University School of Medicine

**An iterative framework for improving the accuracy of intraoperative intensity-based 2D/3D registration for image-guided orthopedic surgery**
Yoshito Otake¹, Mehran Armand³, Ofri Sadowsky¹, Robert Armiger², Peter Kazanzides¹, Russell Taylor¹

¹ The Johns Hopkins University
² The Johns Hopkins University Applied Physics Laboratory
Automatic phases recognition in pituitary surgeries by microscope images classification
Florent Lalys¹, Laurent Riffaud², Xavier Morandi³, Pierre Jannin¹
¹ INSERM, U746, Faculty of Medicine CS 34317, F-35043 Rennes, France
² INRIA, VisAGeS Unit/Project, F-35042 Rennes, France University of Rennes I, CNRS, UMR 6074, IRISA, F-35042 Rennes, France
³ Department of Neurosurgery, Pontchaillou University Hospital, F-35043 Rennes, France

8:55-10:05 First Oral session

C-arm tracking by intensity-based registration of a fiducial
Pascal Fallavollita¹, Purang Abolmaesumi², Cliff Burdette³, Danny Song⁴, Gabor Fichtinger¹
¹ Queen’s University
² University of British Columbia
³ Acoustic MedSystems Inc.
⁴ John Hopkins Hospital

First Animal Cadaver Study for Interlocking of Intramedullary Nails under Camera Augmented Mobile C-arm: A Surgical Workflow Based Preclinical Evaluation
Lejing Wang¹, Juergen Landes², Simon Weidert², Tobias Blum¹, Anna von der Heide², Ekkehard Euler³, Nassir Navab¹
¹ Chair for Computer Aided Medical Procedures (CAMP), TU Munich, Germany
² Trauma Surgery Department, Klinikum Innenstadt, LMU Munich, Germany

10:05-10:20 Coffee Break

10:20-10:45 Second set of short 5 minutes presentations

Robot-Assisted Laparoscopic Ultrasound
Caitlin Schneider¹, Gregory Dachs², Christopher Hasser², Michael Choti¹, Simon DiMaio², Russell Taylor¹
¹ Johns Hopkins University
² Intuitive Surgical Inc.

New Kinematic Metric for Quantifying Surgical Skill For Flexible Instrument Manipulation
Jagadeesan Jayender¹, Raul San Jose Estepar², Kirby Vosburgh¹
¹ Harvard Medical School (HMS), Brigham and Women’s Hospital, CIMIT
² Harvard Medical School (HMS), Brigham and Women’s Hospital

GPU-Accelerated Robotic Intra-Operative Laparoscopic 3D Reconstruction
Markus Moll¹, Hsiao-Wei Tang², Luc Van Gool³
¹ Katholieke Universiteit Leuven, ESAT-PSI/IBBT, Department of Electrical Engineering
² Katholieke Universiteit Leuven, PMA, Department of Mechanical Engineering
³ Katholieke Universiteit Leuven, ESAT-PSI/IBBT, Department of Electrical Engineering ETH Zurich, D-ITET/Computer Vision Laboratory
A Minimally Invasive Multimodality Image-Guided (MIMIG) Molecular Imaging System for Periphera}

Tiancheng He1, Zhong Xue3, Kelvin K. Wong2, Miguel Valdivia y Alvarado2, Yong Zhang2, Weixin Xie3, Stephen T.C. Wong2

1 The Center for Bioengineering and Informatics, The Methodist Hospital Research Institute and Department of Radiology, The Methodist Hospital, Weill Cornell Medical College, Houston, Texas, USA. Intelligent Information Institute, Shenzhen University, Shenzhen, China.

2 The Center for Bioengineering and Informatics, The Methodist Hospital Research Institute and Department of Radiology, The Methodist Hospital, Weill Cornell Medical College, Houston, Texas, USA.

3 Intelligent Information Institute, Shenzhen University, Shenzhen, China.

Simulating Dynamic Ultrasound using MR-derived Motion Models to assess Respiratory Synchronisation for Image-Guided Liver Interventions

Erik-Jan Rijkhorst, Daniel Heanes, Freddy Odille, David Hawkes, Dean Barratt
Centre for Medical Image Computing, University College London

10:45-12:30 Second Oral session

Rapid Image Registration of Three-dimensional Transesophageal Echocardiography and X-ray Fluoroscopy for the Guidance of Cardiac Interventions

Gang Gao1, Graeme Penney1, Nicolas Gogin2, Pascal Cathier2, Aruna Arujuna1, Matt Wright3, Dennis Caulfield3, Aldo Rinaldi3, Reza Rezavi1, Kawal Rhode1

1 King’s College London
2 Philips Research
3 Guys & St. Thomas NHS Trust

Patient Specific Modeling and Analysis of the Mitral Valve using 3D-TEE

Philippe Burlina, Chad Sprouse, Daniel DeMenthon, Anne Jorstad, Ray Juang, Francisco Contijoch, Theodore Abraham, David Yuh, Elliot McVeigh
Johns Hopkins University

Evaluation of a 4D Cone-Beam CT Reconstruction Approach using an Anthropomorphic Phantom

Ziv Yaniv1, Jan Boese2, Marily Sarmiento2, Kevin Cleary2
1 Georgetown University
2 Siemens AG Healthcare

12:30-13:30 Lunch

13:30-15:45 Third Oral Session

Determination of Pelvic Orientation from Ultrasound Images Using Patch-SSMs and a Hierarchical Speed of Sound Compensation Strategy

Steffen Schumann1, Marc Puls1, Timo Ecker1, Tobias Schwaegli2, Jan Stifter2, Klaus-A. Siebenrock1, Guoyan Zheng1
1 Inselspital, University of Bern
2 Smith & Nephew Orthopaedics AG

Ultrasound Servoing of Catheters for Beating Heart Valve Repair

Samuel Kesner, Shelten Yuen, Robert Howe
School of Engineering and Applied Sciences, Harvard University
Towards a verified simulation model for radiofrequency ablations
Andreas Weihusen¹, Lisa Hinrichsen², Thomas Carus³, Rainer Dammer⁴, Richard Rascher-Friesenhausen¹², Tim Kroeger¹, Heinz-Otto Peitgen¹, Tobias Preusser¹

¹ Fraunhofer MEVIS
² Bremerhaven University of Applied Sciences
³ Cuxhaven Hospital

Early clinical evaluation of a computer assisted planning system for deep brain surgeries: 1 year of clinical assistance
Pierre-Francois D’Haese¹, Srivatsan Pallavaram¹, Rui Li¹, Todd Shanks², Peter Zahos³, Joseph Neimat⁴, Peter Konrad⁴, Benoit Dawant¹

¹ Department of Electrical and Computer Engineering, Vanderbilt University
² Norton Neuroscience Institute, Louisville KY, USA
³ New Jersey Neuroscience Institute, JFK Medical Center, NJ, USA
⁴ Department of Neurosurgery, Vanderbilt University Medical Center, Nashville, TN, USA

15:45-16:00 Coffee Break
16:00-17:00 Interactive Poster Session