Program of MICCAI 2012
Workshops, Challenges and Tutorials

www.miccai2012.org
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Foreword

Welcome to the 32 MICCAI 2012 workshops, challenges and tutorials!

Since almost the beginning, there have been a few satellite workshops or tutorials associated to the MICCAI conference. However, a new dynamic was initiated in 2006 at the Copenhagen edition of the MICCAI conference with a significant increase in the number of these events. Since then, the success of MICCAI satellite events has grown and their number has risen continuously. In 2011 and 2012, the number of workshop / tutorial participants cumulated over the 2 days of workshops has reached the number of participants to the main MICCAI conference. Hence, MICCAI satellite events are now a central place for the animation of the MICCAI community, allowing discussions on focused subjects more in depth than during the main conference.

For the 2012 edition, we changed the title of MICCAI satellite events to “Workshops, Challenges and Tutorials” to better emphasize the importance of the challenges. This includes both online challenges, with computations performed online during the event, and offline challenges whose objective is to compare the performances of competing methods on the same data. These events show the maturity of the field and participate intensively to the MICCAI community building.

Last but not least, in addition to the USB key of the MICCAI workshops, we initiated this year a global program of the MICCAI satellite events (this booklet) to promote the cross-fertilization of the different workshops, challenges and tutorials. We sincerely hope that this program will be an incentive to look at papers from other events and will facilitate the navigation between the presentations onsite.

Of course, the organization of the 32 MICCAI 2012 satellites events would not have been possible without the very active participation of the workshop co-chairs, T. Heimann, K. Pohl and A. Shimizu, the 140 workshop / challenge / tutorial organizers and the local organization committee, in particular Agnes Cortell. I want to thank them wholeheartedly and wish you, on behalf of all of them, very enjoyable and productive MICCAI workshops, challenges and tutorials.

Xavier Pennec, PhD
MICCAI 2012 workshop chair
General Information

Workshops / Challenges / Tutorials Location
Registration for all Workshops, Challenges and Tutorials takes place at the Acropolis ground floor. Workshops, challenges and tutorials are held in the Acropolis, on the second floor (Auditorium and Foyer Hermes, rooms Gallieni 1 to 7 and Maia), and in the Novotel, on the first floor (rooms Matisse, Garibaldi, Chagall and Cheret). Lunch and coffee breaks are provided at both locations.
The Novotel hotel is located at a 5 minute walking distance from the Acropolis Center. The Novotel Hotel address is 8/10 Parvis de l'Europe, 06300 Nice.

Registration Desk (Acropolis ground floor) opening hours:
- Sunday, September 30, 2012: 05:00 pm - 07:00 pm
- Monday, October 1, 2012: 07:30 am - 09:00 pm
- Tuesday, October 2, 2012: 07:00 am - 06:30 pm
- Wednesday, October 3, 2012: 08:00 am - 06:00 pm
- Thursday, October 4, 2012: 08:00 am - 06:00 pm
- Friday, October 5, 2012: 08:00 am - 06:00 pm

Delegate Badge
A name badge with bar code will be provided with your registration documents on site. Please wear your delegate badge at all times. All entrances to conference, workshops, exhibition halls and social events are manned by ushers.
Only MICCAI 2012 participants wearing an appropriate official delegate badge will be allowed to access the conference site and to attend the scientific and social programs.

Internet Access
Wifi access is available in the Acropolis Convention Center for all delegates from the 1st October to the 5th October 2012.

Access codes:
Network: miccai2012
Login: miccai2012
Password: miccai2012

Wifi access is also available in the Novotel on 1st October and 5th October 2012 through the Orange Wifi network (just enter your name and email to connect).
Posters
The posters for events located at the Acropolis will be set up in Agora 2, 2nd floor of Acropolis. The posters for events located at the Novotel will be set up within and around the rooms of the workshops. Posters have to be mounted on the workshop day from 8:30 AM and will have to be withdrawn before 6 PM on the same day. Non-withdrawn posters will be discarded.

The poster size for MICCAI 2012 workshops and challenges is standard A0 Portrait (841mm in width and 1189mm in height). The conference will supply materials for mounting the posters. This size specification must be strictly adhered to in preparation of your posters.

Acropolis Conference Center
Please find below a direction map from Nice Acropolis Conference Center to the Novotel.
MICCAI 2012 Satellite Events
Organization

General Chair
Nicholas Ayache (Inria, FR)

Workshops, Tutorials and Challenges Chair and Co-Chairs
Xavier Pennec (Inria, FR) (Chair)
Tobias Heimann (Siemens AG, DE)
Kilian Pohl (University of Pennsylvania, US)
Akinobu Shimizu (Tokyo University of Agriculture and Technology, JP)

Workshops / Tutorials / Challenges Organizers

Leon Axel
Nicholas Ayache
Eric Bardinet
Dean Barrat
Stefan Bauer
Manon J.N.L. Benders
Marie-Odile Berger
Wolfgang Birkfellner
Stefan Bohn
Oliver Burgert
Oscar Camara
Elvis Chen
Kiyo Chinzei
Nikos P. Chrisochoides
Stéphane Cotin
Antonio Criminisi
Benoit Dawant
Stefanie Demirci
Rachid Deriche
Jason Dowling
Klaus Drechsler
Stanley Durrleman
Andinet Enquobahrie
Marius Erdt
Caroline Essert
Pascal Fallavollita
Michael Feldman
Tom Fletcher
Fei Gao
Guido Gerig
Stamatia Giannarou
Alexandra Golby
Sylvain Gouttard
Hayit Greenspan
Metin Gurcan
Gregory Hager
Nobuhiko Hata
David Hawkes
David R. Holmes III
Junzhou Huang
Henkjan Huisman
Hiroshi Iseki
Ivana Išgum
Andras Jakab
Pierre Jannin
Leo Joskowicz
Peter Kazanzides
Sjoerd Kerkstra
Ron Kikinis
Hortense Kirisli
Ender Konukoglu
Rajesh Kumar
Bennett Landman
Thomas Langø
Georg Langs
Su-Lin Lee
Joshua A. Levine
Frank Lindseth
Marius George Linguraru
Cristian A. Linte
Geert Litjens
Tianming Liu
Anant Madabhushi
Tommaso Mansi
Jamie McClelland
Bjoern Menze
Dimitris Metaxas
Karol Miller
Johan Montagnat
Albert Montillo
John Moore
Henning Müller
Maria Murgasova
Arya Nabavi
Nassir Navab
Local Organization Committee
Agnès Cortell (Inria, FR) (chair)  
Grégoire Malandain (Inria, FR)
Marc Barret (Inria, FR)  
Xavier Pennec (Inria, FR)
Hervé Delingette (Inria, FR)  
Maxime Sermesant (Inria, FR)

Workshops / Tutorials / Challenges Organizers
Thomas Neumuth  
Thomas Schultz
Poul M.F. Nielsen  
Maxime Sermesant
Wiro Niessen  
Karun Sharma
Marc Niethammer  
Raj Shekhar
Lauren O’Donnell  
Dinggang Shen
Sebastien Ourselin  
Li Shen
Cristina Oyarzun Laura  
Kuangyu Shi
Nicolas Padoy  
J. Shotton
Eleftheria Panagiotaki  
Colin Studholme
Rasmus R. Paulsen  
Martin Styner
Caroline Petitjean  
Kenji Suzuki
Mihaela Pop  
Tanveer Syeda-Mahmood
Marcel Prastawa  
Rob Toth
Sylvain Prima  
Zhuowen Tu
Sonia Pujol  
Gozde Unal
Petia Radeva  
Bram van Ginneken
Nasir Rajpoot  
Koen Van Leemput
Mauricio Reyes  
Theo van Walsum
Kawal Rhode  
Michael W. Vannier
Simon Rit  
Ragini Verma
François Rousseau  
Max A. Viergever
Daniel Rueckert  
Fei Wang
Joel H. Saltz  
Lei Wang
Alexander Schlaefer  
Simon Warfield
Julia A. Schnabel  
William Wells
Stefan Wesarg  
Carl-Fredrik Westin
Ross T. Whitaker  
Adam Wittek
Karun Sharma  
Pingkun Yan
Dinggang Shen  
Guang-Zhong Yang
Li Shen  
Ziv Yaniv
Kuangyu Shi  
Pew-Thian Yap
J. Shotton  
Hiro Yoshida
Colin Studholme  
Alistair oung
Martin Styner  
Paul Yushkevich
Kenji Suzuki  
Yongjie Zhang
Tanveer Syeda-Mahmood  
Gary Hui Zhang
Rob Toth  
Shaoting Zhang
Zhuowen Tu  
Lilla Zöllei
Gozde Unal  

Program of MICCAI 2012 Workshops, Challenges and Tutorials

Monday October 1st
Monday October 1
Novotel level 1
Workshops / Challenges / Tutorials & Posters

MeshMed

DTI-Tracto-6 to 10

Monday October 1 Workshops / Challenges / Tutorials

Monday October 1 Posters

Coffee break

DTI-Tracto-6 to 10

MeshMed-4 to 6

ABDI-1 to 3

MeshMed-7 to 8

MeshMed-1 to 3

ABDI-10 to 12

PaPi-4 to 7

PaPi-1 to 3

STENT-3 to 7

STENT-8 to 12

PaPi / STENT

Coffee break
Acropolis level 2
Monday October 1 Workshops / Challenges / Tutorials & Posters

MLMI-1 to 18  Monday October 1 Posters

IGT-tut  Monday October 1 Workshops / Challenges / Tutorials
October 1st

ABDI (08:45 – 17:30) - Novotel, Room Chagall
MICCAI 2012 workshop on Computational and Clinical Applications in Abdominal Imaging

http://www.abdominal-miccai2012.org
Organizers: Hiro Yoshida, Michael W. Vannier, David Hawkes, Nicholas Ayache

08:45 - 09:00 Opening Session
Hiro Yoshida

09:00 - 09:30 Plenary Lecture: Clinical Applications in Computational Abdominal Imaging in the Era of Health Care Reform.
Sanjay Saini

09:30 - 10:30 Liver, Kidney, and other organs - Oral Presentations 1
09:30 - 09:45 Relaxed conditional statistical shape models and their application to liver segmentation.
Sho Tomoshige, Elco Oost, Hidefumi Watanabe, Akinobu Shimizu, Hidefumi Kobatake, Shigeru Nawano

09:45 - 10:00 A Landmark-Based Primal-Dual Approach for Discontinuity Preserving Registration.
Silja Kiriyanthan, Ketut Fundana, Tahir Majeed, Philippe C. Cattin

10:00 - 10:15 Predicting Liver Motion Using Exemplar Models.
Golnoosh Samei, Christine Tanner, Gabor Szekely

Sanat Upadhyay, Manos Papadakis, Saurabh Jain, Gregory Gladish, Ioannis A. Kakadiaris, Robert Azencott

10:30 - 11:00 Coffee break

11:00 - 12:30 Liver, Kidney, and other organs - Oral Presentations 2
11:00 - 11:15 Evaluation of Diffusion Filters for 3D CTA Liver Vessel Enhancement.
Ha Luu Manh, Adriaan Moelker, Camiel Klink, Adrienne Mendrik, Wiro Niessen, Theo van Walsum

Weimin Huang, Wei Xiong, Jiayin Zhou, Jing Zhang, Tao Yang, Jiang Liu, Yi Su, Calvin Lim, Chee Kong Chui, Stephen Chang

Wenwu Zhu, Stephane Nicolau, Luc Soler, Alexandre Hostettler, Jacques Marescaux, Yves Rémond

11:45 - 12:00 Fast Segmentation of Abdominal Wall: Application to Sliding Effect Removal for Non-Rigid Registration.
Wenwu Zhu, Stephane Nicolau, Luc Soler, Alexandre Hostettler, Jacques Marescaux, Yves Rémond

12:00 - 12:15 A Fully Automated Framework for Renal Cortex Segmentation.
Xinjian Chen, Hemin Zhao, Jianhua Yao
12:15 - 12:30 An Implicit Inter-Subject Shape Driven Image Deformation Model for Prostate Motion Estimation.
Bartlomiej W. Papiez, Bogdan J. Matuszewski, Lik-Kwan Shark, Christopher Moore

12:30 - 14:00 Lunch

14:00 - 14:30 Plenary Lecture: CT colonography: current techniques and their clinical significance
Plenary Lecture: CT colonography: current techniques and their clinical significance.
Didier Bielen

14:30 - 15:30 Colon and Other Gastrointestinal Tract - Oral Presentations 1
14:30 - 14:45 Prone to Supine CT Colonography Registration using a Landmark and Intensity Composite Method
Thomas Hampshire, Holger Roth, Darren Boone, Greg Slabaugh, Steve Halligan, David Hawkes

14:45 - 15:00 External Clinical Validation of Prone and Supine CT Colonography Registration
Holger R. Roth, Darren J. Boone, Steve Halligan, Thomas E. Hampshire, Jamie R. McClelland, Mingxing Hu, Shonit Punwani, Stuart Taylor, David J. Hawkes

15:00 - 15:15 Efficient Topological Cleaning for Visual Colon Surface Flattening.
Rui Shi, Wei Zeng, Jerome Zhengrong Liang, Xianfeng David Gu

Janne J. Näppi, Se Hyung Kim, Hiroyuki Yoshida

15:30 - 16:00 Coffe break

16:00 - 17:15 Colon and Other Gastrointestinal Tract - Oral Presentations 2
16:00 - 16:15 Computer-Aided Detection for Ultra-low-dose CT Colonography.
Janne J. Näppi, Masanori Imuta, Yasuyuki Yamashita, Hiroyuki Yoshida

16:15 - 16:30 Application of CT simulation technique for virtual ultra low-dose trial in CT colonography.
Chang-Won Kim, Jong Hyo Kim

16:30 - 16:45 A Supervised Learning Based Approach To Detect Crohn’s Disease in Abdominal MR Volumes.
Dwarikanath Mahapatra, Peter Schüffler, Jeroen A.W. Tielbeek, Joachim M. Buhmann, Franciscus M. Vos

16:45 - 17:00 Out-of-Plane Motion Compensation in Cine-MRI.
Mehmet Yigitsoy, Sonja Kirchhoff, Maximilian F. Reiser, Nassir Navab

17:00 - 17:15 Real-Time Phase Boundary Detection for Colonoscopy Videos using Motion Vector Templates.
Ruwani Nawaratna, JungHwan Oh, Jayantha Muthukudage, Wallapak Tavanapong, Johnny Wong, Piet C. de Groen

17:15 - 17:30 Closing session
H. Yoshida
Colonic and Other Gastrointestinal Tract - Poster

Application of CT Simulation Technique for Virtual Fecal Tagging in CTC.
Zepa Yang, Hyeong-min Jin, Jong Hyo Kim

Application of CT Acquisition Parameters as Features in Computer-Aided Detection for CT Colonography.
Janne J. Näppi, Don Rockey, Daniele Regge, Hiroyuki Yoshida

Comparative Performance of State-of-the-Art Classifiers in Computer-Aided Detection for CT Colonography.
Sang Ho Lee, Janne J. Näppi, Hiroyuki Yoshida

Piecewise Structural Diffusion Defined on Shape Index for Noise Reduction in Dual-Energy CT Images.
Wenli Cai, June-Goo Lee, Da Zhang, Christina Piel, Hiroyuki Yoshida

Liver, Kidney, and other organs - Poster

Segmentation of the Cartilage in the Rib Cage in 3D MRI.
Yolanda H. Noorda, Lambertus W. Bartels, Josien P.W. Pluim

Method for Detecting Enlarged Lymph Nodes From 3D Abdominal CT Images with A Multi-shape and Multi-scale Ellipsoidal Structure Detection Filter.
Masahiro Oda, Takayuki Kitasaka, Michitaka Fujiwara, Kazunari Misawa, Kensaku Mori

Delineation of Liver Tumors from CT Scans Using Spectral Clustering with Out-of-Sample Extension and Multi-windowing.
Jiayin Zhou, Weimin Huang, Wei Xiong, Wenyu Chen, Sudhakar K. Venkatesh, Qi Tian

Evaluation of Medical Image Registration by using 3D SIFT and Phase-only Correlation.
Zisheng Li, Tsuneya Kurihara, Kazuki Matsuzaki, Toshiyuki Irie

Optimal Medial Surface Generation for Anatomical Volume Representations.
Sergio Vera, Miguel A. González, Marius George Linguraru, Debora Gil

Registration of Free-Breathing Abdominal 3D Contrast-Enhanced CT.
Blandine Romain, Véronique Letort, Olivier Lucidarme, Florence d’Alché-Buc, Laurence Rouet

Harvey Ho, Adam Bartlett, Peter Hunter

Tracer Kinetic Modeling by Morales-Smith Hypothesis in Hepatic Perfusion CT.
Sang Ho Lee, Wenli Cai, Hiroyuki Yoshida
October 1st

**BraTS-Ch** (9:00 – 17:00, jointly held with PROMISE-Ch) - Acropolis, Room Gallieni 5

**MICCAI 2012 challenge on Multimodal Brain Tumor Segmentation**

http://www.imm.dtu.dk/BRATS2012

Organizers: Bjoern Menze, Andras Jakab, Stefan Bauer, Mauricio Reyes, Marcel Prastawa, Koen Van Leemput

09:00 - 09:05  **Joint PROMISE and BRaTS introduction**

09:05 - 10:30  **Short oral presentation of the participants**

Classification Forests with Initial Probabilities for Brain Tumor Segmentation.

Hierarchical Random Walker for Multimodal Brain Tumor Segmentation.
Y. Xiao and J. Hu

Segmentation of Brain Tumor Images Based on Integrated Hierarchical Classification and Regularization.
S. Bauer, T. Fejes, J. Slotboom, R. Wiest, L.-P. Nolte and M. Reyes

Spatial Decision Forests for Glioma Segmentation in Multi-Channel MR Images.
E. Geremia, B. H. Menze and N. Ayache

Multi-modal Brain Tumor Segmentation via Latent Atlases.
T. Riklin Raviv, B. Menze and K. Van Leemput

Brain Tumor Segmentation Based on GMM and Active Contour Method with a Model-aware Edge Map.
L. Zhao, W. Wu and J.J. Corso

Automatic Brain Tumor Segmentation based on a Coupled Global-Local Intensity Bayesian Model.
X. Tomas-Fernandez and S. K. Warfield

Hybrid Clustering and Logistic Regression for Multi-Modal Brain Tumor Segmentation.
H.-C. Shin

Segmenting Glioma in Multi-Modal Images using a Generative-Discriminative Model for Brain Lesion Segmentation.
B. H. Menze, E. Geremia, N. Ayache and G. Szekely

Segmenting Glioma in Multi-Modal Images using a Generative Model for Brain Lesion Segmentation.

Probabilistic Gabor and Markov Random Fields Segmentation of Brain Tumours in MRI Volumes.
N. K. Subbanna and T. Arbel

Multimodal Brain Tumor Segmentation Using The «Tumor-cut» Method on The BraTS Dataset.
A. Hamamci and G. Unal
10:30 - 11:00  Coffee break
11:00 - 12:00  Invited talks
Automated tumor segmentation for radiotherapy planning.
Prof. Jan Unkelbach, Massachusetts General Hospital, Harvard Medical School
Multimodal image analysis for glioma characterization.
Dr. Andras Jakab, University of Debrecen Medical and Health Science Center
12:00 - 13:00  Joint PROMISE and BRaTS clinical talks
Imaging workflow in daily clinical routine - benefits and pitfalls of advanced brain tumor imaging.
Prof. Roland Wiest, Bern University Hospital
PROMISE talk (12:30): Clinical aspects of prostate imaging.
Francois Cornud MD. Paris
13:00 - 15:00  Lunch and Poster Session
15:00 - 15:30  BRATS Challenge results and discussion
15:30 - 16:00  Coffee break
16:00 - 17:00  Joint PROMISE and BRaTS discussion on metrics and clinical relevance
October 1st

CardioSeg-Ch (9:00 – 17:30) - Acropolis, Room Gallieni 7
3D Cardiovascular Imaging: a MICCAI Segmentation Challenge

http://grand-challenge2012.bigr.nl/
Organizers: Hortense Kirisli, Theo van Walsum, Wiro Niessen, Caroline Petitjean

09:00 - 12:30  Presentation and distribution of the on-site testing datasets
On-site challenge: participants will run their algorithms on this data. Include a coffee break (10.30-11.00).

12:30 - 14:00  Lunch break
Concurrent poster session Evaluation of the on-site challenge results by the organizers.

14:00 - 15:00  Keynote lecture: Innovations in diagnostic imaging technologies: basic principles and clinical perspectives of cardiac CTA and MRI. Prof. J.H.C. Reiber

15:00 - 15:30  Presentations from both challenges
15:00 - 15:15  Automatic detection, quantification and lumen segmentation of the coronary arteries using two-point centerline extraction scheme.
Rahil Shahzad et al

15:15 - 15:30  Multi-atlas based segmentation with local label fusion for right ventricle MR images.
Wenjia Bai et al

15:30 - 16:00  Coffee break
Concurrent poster session Participants can explain their algorithm, possibly including on-site demos

16:00 - 16:30  Presentations from both challenges
16:00 - 16:15  Accurate stenosis detection and quantification in coronary CTA.
Brian Mohr et al

16:15 - 16:30  Automatic right ventricle segmentation using multi-label fusion in cardiac MRI.
Maria A. Zuluaga et al

16:30 - 17:30  Presentation of the challenge results Prize giving
Closing discussion

List of accepted papers

Coronary artery stenoses detection/quantification challenge
Vessel Segmentation Using Implicit Model-Guided Level Sets.
Chunliang Wang, Rodrigo Moreno, and Orjan Smedby
Automatic detection, quantification and lumen segmentation of the coronary arteries using two-point centerline extraction scheme.
Rahil Shahzad, Theo van Walsum, Hortense Kirişli, Hui Tang, Coert Metz, Michiel Schaap, Lucas van Vliet, and Wiro Niessen

FrenchCoast: Fast, Robust Extraction for the Nice Challenge on COronary Artery Segmentation of the Tree.
Alexander Broersen, Pieter H. Kitslaar, Michel Frenay, and Jouke Dijkstra

Probabilistic model based evaluation of coronary artery stenosis on Computed Tomography Angiography.
Kuo-Lung Lor and Chung-Ming Chen

Quantification of Coronary Arterial Stenosis by Inflating Tubes in CT Angiographic images.
Abouzar Eslami, Amin Aboee, Zardosht Hodaei, Mandana Javanshir Moghaddam, Stephane Carlier, Amin Katouzian, and Nassir Navab

Automatic Detection of Stenoses in Computed Tomography Angiography.
Suheyla Cetin and Gozde Unal

Accurate Stenosis Detection and Quantification in Coronary CTA.
Brian Mohr, Saad Masood, Costas Plakas

Coronary artery segmentation and stenosis quantification in CT images with use of a right generalized cylinder model.
Leonardo Flórez-Valencia, Maciej Orkisz, Ricardo A. Corredor Jerez, Juan S. Torres González, Esteban M. Correa Agudelo, Claire Mouton, and Marcela Hernández Hoyos

A Hybrid Method for Coronary Artery Stenosis Detection and Quantification.
İlkay Öksüz, Devrim Ünay, and Kamuran Kadıpaşaoğl

Automatic Coronary Arteries Stenoses Detection in 3D CT angiography.
Imen Melki, Hugues Talbot, Jean Cousty, Celine Pruvot, Jerome Knopfich, Laurent Launay, and Laurent Najman

Coronary Artery Stenoses Detection with Random Forest. Matthieu Duval, Elodie Ouzeau, Frederic Precioso, and Bogdan Matuszewski

Right ventricle segmentation challenge
A Simple and Fully Automatic Right Ventricle Segmentation Method for 4-Dimensional Cardiac MR Images.
Ching-Wei Wang, Chun-Wei Peng, and Hsiang-Chou Chen

Right-Ventricle Segmentation with 4D Region-Merging Graph Cuts in MR.
Oskar M O Maier, Daniel Jimenez Carretero, Andres Santos Lleo, and Mara J Ledesma-Carbayo

Multi-Atlas Based Segmentation with Local Label Fusion for Right Ventricle MR Images.
Wenjia Bai, Wenzhe Shi, Haiyan Wang, Nicholas S. Peters, and Daniel Rueckert

Automatic Right Ventricle Segmentation using Multi-Label Fusion in Cardiac MRI.
María A. Zuluaga, M. Jorge Cardoso, and Sebastien Ourselin

Right ventricle segmentation by graph cut with shape prior.
Damien Grosgeorge, Caroline Petitjean, Su Ruan

Multi-Atlas Segmentation of the Cardiac MR Right Ventricle.
Yangming Ou, Jimit Doshi, Guray Erus, and Christos Davatzikos

Rapid Automated 3D Endocardium Right Ventricle Segmentation in MRI via Convex Relaxation and Distribution Matching Cyrus.
M.S. Nambakhsh, Martin Rajchl, Jing Yuan, Terry M. Peters, Ismail Ben Ayed
October 1st

**CBM 7** (9:00 – 17:30) - Acropolis, Room Maïa

**MICCAI 2012 workshop on Computational Biomechanics for Medicine VII**


Organizers: Adam Wittek, Karol Miller, Poul M.F. Nielsen

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<td><strong>Session 1: Computational Biomechanics of Soft Organs (Part 1)</strong></td>
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<td>09.10 - 10.00</td>
<td>Keynote 1: Cutting in real-time in corrotational elasticity and perspectives on simulating cuts. Stéphane P.A. Bordas (Hadrien Courtecuisse, Pierre Kerfriden, Stéphane P.A. Bordas)</td>
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<td>10.00 - 10.30</td>
<td>Efficient suturing of deformable models. Georges Younes, Julien abi-Nahed, George Turkiyya</td>
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<td>10.30 - 11.00</td>
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<td>11.00 - 12.30</td>
<td><strong>Session 1: Computational Biomechanics of Soft Organs (Part 1 cont.)</strong></td>
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<td>11.00 - 11.30</td>
<td>Intraoperative damage monitoring of endoclamp balloon expansion using real-time finite element modeling. Nele Famaey, Vukašin Štrbac, and Jos Vander Sloten</td>
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<td>11.30 - 12.00</td>
<td>Heterogeneous biomechanical model on correcting brain deformation induced by tumor resection. Yixun Liu, Nikos Chрисоhoides</td>
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<td>12.00 - 12.30</td>
<td>Registration of brain tumor images using hyper-elastic regularization. Andac Hamamci, Gozde Unal</td>
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<td>12:30 - 14:10</td>
<td><strong>Lunch and Poster Session</strong></td>
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**Patient-specific computational models:** Tools for improving the efficiency of Medical Compression Stockings.
L. Dubuis, C. P.-Y. Rohan, S. Avril, P. Badel, J. Debayle

**Objective evaluation of accuracy of intraoperative neuroimage registration.**
Revanth Reddy Garlapati, Grand Roman Joldes, Adam Wittek, Jonathan Lam, Neil Weisenfeld, Arne Hans, Simon K. Warfield, Ron Kikinis, Karol Miller

**3D Algorithm for simulation of soft tissue cutting.**
Xia Jin, Grand Roman Joldes, Karol Miller, Adam Wittek

**Simulation of congenital heart defect corrective surgeries using thin shell elements.**
Stefan Kislinskiy, Tomáš Golembiovský, Christian Duriez, Eugénie Riesenkampff, Titus Kuehne, Hans-Peter Meinzer, and Tobias Heimann
Ahmed Mostayed, Revanth Reddy Garlapati, Grand Roman Joldes, Adam Wittek, Ron Kikinis, Simon K. Warfield, Karol Miller

Trabecular bone poroelasticity for microCT-based FE models.
Clara Sandino and Steven K. Boyd

Identification of tongue muscle fibre group contraction from MR images
Yikun Wang, Thiranja P. Babarenda Gamage, Poul M.F. Nielsen, Oliver Röhrle, and Martyn P. Nash

14:10 - 15:30 | Session 2: Computational Biomechanics of Soft Organs (Part 2)
14:10 - 15:00 | Keynote 2: Why most of the intra-operative medical robotic devices do not use biomechanical models? Some clues to explain the bottlenecks and the needed research breakthroughs.
Yohan Payan

15:00 - 15:30 | Numeric simulation of fluid structure interaction in the aortic arch.
Suzie Brown, Jing Wang, Harvey Ho, and Stephen Tullis

15:30 - 16:00 | Coffee Break

16:00 - 17:30 | Session 3: Musculoskeletal System and Injury Biomechanics
16:00 - 16:30 | Using multibody dynamics to design total knee replacement implants.
John L. Williams, Said T. Gomaa

16:30 - 17:00 | Finite element analysis of thorax responses under quasi-static and dynamic loading.
Jikuang Yang, Fang Wang, Guibing Li, Xiaoqing Jiang

17:00 - 17:30 | Using tagged MRI to quantify the 3D deformation of a cadaver brain in response to angular acceleration.
DBSMC (14:00 – 17:45) - Acropolis, Room Gallieni 2

MICCAI 2012 workshop on Deep Brain Stimulation Methodological Challenges

http://dbsmc2012.sciencesconf.org/
Organizers: Eric Bardinet, Stéphane Cotin, Benoit Dawant, Caroline Essert, Pierre Jannin, Leo Joskowicz

13:55 - 14:00 Welcome
14:00 - 14:40 Invited talk
   Evidence-based medicine and clinical decision making in deep brain stimulation.
   Christopher R. Butson

14:45 - 15:30 Brain atlases and definition of targets
14:45 - 15:05 Unbiased MRI atlases for Deep Brain Surgery.
   Louis Collins, Vladimir Fonov, Claire Haegelen, Yiming Xiao, Xavier Morandi, Pierre Jannin
15:05 - 15:30 Comparing target localization methods for Deep Brain Surgery:
   Combination of functional and diffusion MRI versus a generic Atlas.
   Halleh Ghaderi, Jennifer Campbell, Fahd Alsubaie, Abbas Sadikot, G. Bruce Pike

15:30 - 16:00 Coffee break
16:00 - 17:40 Assistance to decision making
16:00 - 16:25 Deep brain stimulation surgery time reduction based on the automatic
detection of the subthalamic nucleus: method and preliminary results.
   Reuben Shamir, Adam Zaidel, Leo Joskowicz, Hagai Bergman, Zvi Israel
   Alexandre Bilger, Caroline Essert, Christian Duriez, Stéphane Cotin
16:50 - 17:15 Value of multi-center collaboration towards building electrophysiological
   atlases.
   Pierre-francois D’haese, Srivatsan Pallavaram, Timothy Goble, Chima Oluigbo, Punit
   Agrawal, Alexander Taghva, Kristin Philip, Chris Kao, Joseph Neimat, Ali Rezai, Peter
   Konrad, Benoit Dawant
17:15 - 17:40 Automatic Parameters Optimization for Deep Brain Stimulation
   Trajectory Planning.
   Caroline Essert, Maud Marchal, Sara Fernandez-Vidal, Tiziano D’Albis, Eric Bardinet,
   Claire Haegelen, Marie-laure Welter, Jérôme Yelnik, Pierre Jannin

17:40 - 17:45 Closing remarks
DCICTIA (9:00 – 12:30) - Acropolis, Room Gallieni 3

MICCAI 2012 workshop on Data- and Compute-Intensive Clinical and Translational Imaging Applications

http://proton.polytech.unice.fr/DCICTIA-MICCAI12/

Organizers: Johan Montagnat, Joel H. Saltz

09:00 - 10:40  
09:00 - 09:40  Keynote: Medical Image Analysis on GPUs: Challenges and Future Trends.  
Manuel Ujaldon, University of Malaga

09:40 - 10:00  Accelerating MI-based B-spline Registration using CUDA Enabled GPUs.  
James Shackleford, Nagarajan Kandasamy and Gregory Sharp

10:00 - 10:20  A Fast Parallel Implementation of Queue-based Morphological Reconstruction using GPUs.  
George Teodoro, Tony Pan, Tahsin Kurc, Lee Cooper, Jun Kong and Joel Saltz

10:20 - 10:40  Optimization and Parallelization of the Matched Masked Bone Elimination Method for CTA.  
Henk Marquering, Jeroen Engelbers, Paul Groot, Charles Majoie, Ludo Beenen, Antoine van Kampen and Silvia Olabarriaga

10:40 - 11:00  Coffe break

11:00 - 12:30  
11:00 - 11:20  Semantic Federation of Distributed Neurodata.  
Gaignard Alban, Johan Montagnat, Catherine Faron Zucker and Olivier Corby

Xin Qi, Fuyong Xing, Meghana Ghadge, Ivan Rodero, Moustafa Abdelbaky, Manish Parashar, Evita Sadimin, David Foran and Lin Yang

11:40 - 12:00  Content-based Parallel Sub-image Retrieval.  
Fuyong Xing, Xin Qi, David Foran, Tahsin Kurc, Joel Saltz and Lin Yang

12:00 - 12:20  A MapReduce Approach for Ridge Regression in Neuroimaging-Genetic Studies.  
Benoit Da Mota, Michael Eickenberg, Soizic Laguitton, Vincent Frouin, Gael Varoquaux, Jean-Baptiste Poline and Bertrand Thirion

12:20 - 12:30  Workshop conclusions
October 1st

DTI-Tracto-Ch (8:30 – 18:00) - Novotel, Room Matisse
MICCAI 2012 challenge on DTI Tractography

http://dti-challenge.org/
Organizers: Sonia Pujol, Ron Kikinis, Martin Styner, Alexandra Golby, Arya Nabavi, Guido Gerig, William Wells, Carl-Fredrik Westin, Sylvain Gouttard

08:30 - 13:30: On-site DTI Tractography Challenge
10:00 - 10:05: Opening Remarks and Introduction
10:05 - 10:20: DTI Tractography for Neurosurgical Planning: A Grand Challenge
   Sonia Pujol, Ph.D.
10:20 - 10:30: Presentation of the Neurosurgical Cases (Alexandra Golby, M.D.)
10:30 - 11:00: Coffee Break
11:00 - 12:30: DTI Tractography Session
   Multi-fiber tractography for tumour resection with characterization of peri-tumoural tracts.
   Ali R. Khan, Maged Goubran, Jonathan C. Lau, Roy Eagleson, Terry M. Peters, and Sandrine de Ribaupierre
   Multifiber deterministic streamline tractography of the corticospinal tract based on a new diffusion model: Part II.
   Aymeric Stamm, Olivier Commowick, Patrick Perez, and Christian Barillot
   DTI Tractography Challenge 2012 - MITK Global tractography.
   Peter F. Neher, Bram Stieltjes, Marco Reisert, Hans-Peter Meinzer, and Klaus H. Fritzschke
   DTI Tractography Challenge - MICCAI 2012: Global fiber-tractography based on Finsler distance.
   Antonio Tristan-Vega, Santiago Aja-Fernandez, and Carl-Fredrik Westin
   A novel iterative approach for segmentation and tractography of brain white matter fibers using MRI DTI data.
   Riza Alp Guler, Ali Demir, and Gozde Unal
   DTI-FT pipeline for cortico-spinal tract reconstruction at the Epilepsy Surgery Centre Niguarda Hospital.
   Alessio Moscato, and Francesco Cardinale
   Neurosurgical tracking at the Sherbrooke Connectivity Imaging Lab (SCIL).
   Gabriel Girard, Maxime Chamberland, Jean-Christophe Houde, David Fortin, and Maxime Descoteaux
   Derivation of fiber tracts representing the corticospinal tract using anatomical landmarks.
   Joy Matsui, Eun Young Kim, Vincent Magnotta, and Hans Jonhson
   Comparison of different reconstruction algorithms using CAMINO, FSL and MRTRIX packages to create cortico-spinal tracts in tumor patients.
   Sudhir K. Pathak, Deepa Krishnaswamy, and Walter Schneider
Tractography in the CST using an Intrinsic Unscented Kalman filter.
Hesamoddin Salehian,
Guang Cheng, Jiaqui Sun, and Baba C. Vemuri

12:30 - 14:00 Lunch and Poster Session
14:00 - 14:45 Keynote Lecture: «Considerations on the use of Diffusion MRI tractography to investigate brain connectivity»
Carlo Pierpaoli, M.D., Ph.D.
14:45 - 15:15 DTI Phantom (Martin Styner, Ph.D.)
15:15 - 16:00 Coffee Break and Closed Review Session
16:00 - 16:50 The Neurosurgeon’s Perspective on DTI Tractography
Alexandra Golby, M.D., and Arya Nabavi, M.D.
16:50 - 17:05 Neurosurgical Cases Results
Sonia Pujol, Ph.D.
17:05 - 18:00 Interdisciplinary Panel Discussion with all Teams, Jury Members and Neurosurgeons
IGT-Tut (9:00 - 17:30) - Acropolis, Foyer Hermes

MICCAI 2012 tutorial: From Minimally Invasive Image-Guided Interventions To Non-Invasive Ultrasound based Interventions

http://medtech.sintef.no

Organizers: Ziv Yaniv, Pascal Fallavollita, Frank Lindseth, Thomas Langø

09:00 - 12:30  Part I: Minimally Invasive IGI-Technology.
Moderators: Pascal Fallavollita and Ziv Yaniv

09:00 - 10:45  Morning Sessions 1
09:00 - 09:15  Introduction, and overview.
Ziv Yaniv, CNMC
09:15 - 09:45  Imaging.
Wolfgang Birkfellner, Medical University of Vienna
09:45 - 10:15  Segmentation.
Marius Linguraru, CNMC
10:15 - 10:45  Registration, rigid and non-rigid.
Aristeidis Sotiras, UPenn

10:45 - 11:00  Q/A and Break

11:00 - 12:30  Morning Sessions 2
11:00 - 11:30  Tracking systems.
Ziv Yaniv, CNMC
11:30 - 12:00  Visualization and augmented reality.
Nassir Navab, TUM
12:00 - 12:30  Robots in image-guided interventions.
Russel H. Taylor Johns Hopkins University

12:30 - 14:00  Lunch

14:00 - 17:30  Part II: Ultrasound-based guidance and Therapy.
Moderators: Frank Lindseth and Thomas Langø

14:00 - 15:30  Afternoon Sessions 1
14:00 - 14:30  State of the art Ultrasound-based navigation.
Frank Lindseth, SINTEF
14:30 - 14:50  US-based IGI in Neurosurgery.
Tormod Selbekk, SINTEF
14:50 - 15:10  US-based IGI in Oncology and Cardiology etc.
Wolfgang Wein, TUM
George Stetten, U. Pitt
15:30 - 16:00  Q/A and Break
16:00 - 17:30  Afternoon Sessions 2
16:00 - 16:30  Overview of High Intensity Focused Ultrasound (HIFU).
Thomas Lange, SINTEF
16:30 - 17:00  Motion compensation in HIFU.
Stefan Klein, Erasmus MC
17:00 - 17:30  Ultrasound induced drug delivery.
Rune Hansen, SINTEF
**M2CAI** (9:00 – 12:30) - Acropolis, Room Gallieni 2

**MICCAI 2012 workshop on Modeling and Monitoring of Computer Assisted Interventions**

http://ubimon.doc.ic.ac.uk/m2cai/m1603.html


**09:00 - 10:30 Session 1**

09:00 - 09:15 Introduction
09:15 - 09:40 Prediction of remaining procedure time from current surgical activities.
Stefan Franke
09:40 - 10:05 HCI Design in the OR: A Gesturing Case-study.
Ali Bigdelou
10:05 - 10:30 Towards Automated Activity Recognition in an Intensive Care Unit.
Colin Lea

**11:00 - 12:30 Session 2**

Kenko Fujii
Sebastian Bodenstedt
11:50 - 12:15 A User-Centered and Workflow-Aware Unified Display for the Operating Room.
Ralf Stauder
12:15 - 12:30 Panel discussion
October 1st

**MBIA (9:15 – 17:15)** - Acropolis, Room Gallieni 1

**MICCAI 2012 workshop on Multimodal Brain Image Analysis**

http://mbia2012.web.unc.edu

Organizers: Pew-Thian Yap, Tianming Liu, Dinggang Shen, Carl-Fredrik Westin, Li Shen

09:15 - 09:30 Opening Remarks & Announcements

09:30 - 10:30 **Keynote Speech:** Multi-modal Brain Image Analysis of Abnormalities of the Developing Brain.
Simon Warfield

10:30 - 11:00 Coffee Break

11:00 - 12:30 **Oral Session 1**
Chair: Mert Rory Sabuncu (Harvard Medical School)

Jingwen Yan, Shannon L. Risacher, Sungeun Kim, Jacqueline C. Simon, Taiyong Li, Jing Wan, Hua Wang, Heng Huang, Andrew J. Saykin, Li Shen, for the ADNI

11:15 - 11:30 Combining DTI and MRI for the Automated Detection of Alzheimer’s disease Using a Large European Multicenter Data Set.
Martin Dyrba, Michael Ewers, Martin Wegrzyn, Ingo Kilimann, Claudia Plant, Annahita Oswald, Thomas Meindl, Michela Pievani, Arun Bokde, Andreas Fellgiebel, Massimo Filippi, Harald Hampel, Stefan Klöppel, Karlheinz Hauenstein, Thomas Kirste, Stefan Teipel, and the EDSD study group

11:30 - 11:45 Genetics of Path Lengths in Brain Connectivity Networks: HARDI-Based Maps in 457 Adults.
Neda Jahanshad, Gautum Prasad, Arthur Toga, Katie McMahon, Greig de Zubicaray, Nicholas Martin, Margaret Wright, Paul Thompson

11:45 - 12:00 Connectivity Network Breakdown Predicts Imminent Volumetric Atrophy in Early Mild Cognitive Impairment.
Talia Nir, Neda Jahanshad, Arthur Toga, Clifford Jack, Michael Weiner, Paul Thompson

12:00 - 12:15 Deconfounding the Effects of Resting State Activity on Task Activation Detection in fMRI.
Burak Yoldemir, Bernard Ng, Rafeef Abugharbieh

Jie Shi, Paul Thompson, Yalin Wang

12:30 - 13:30 Lunch

13:30 - 14:30 **Poster Session (including also oral papers)**

Structural Feature Selection for Connectivity Network-Based MCI Diagnosis
Biao Jie, Daoqiang Zhang, Chong-Yaw Wee, and Dinggang Shen

Groupwise Segmentation Improves Neuroimaging Classification Accuracy.
Yaping Wang, Hongjun Jia, Pew-Thian Yap, Bo Cheng, Chong-Yaw Wee, Lei Guo, and Dinggang Shen
DWI Denoising Using Spatial, Angular, and Radiometric Filtering.
Pew-Thian Yap and Dinggang Shen

MRI Estimation of T1 Relaxation Time Using a Constrained Optimization Algorithm.
Fang Cao, Olivier Commowick, Elise Bannier, Jean-Christophe Ferré, Gilles Edan, and Christian Barillot

Robust Cerebral Blood Flow Map Estimation in Arterial Spin Labeling.
Camille Maumet, Pierre Maurel, Jean-Christophe Ferré, and Christian Barillot

14:30 - 15:30 Oral Session 2
Chair: Yalin Wang (Arizona State University)

14:30 - 14:45 Do We Really Need Robust and Alternative Inference Methods for Brain MRI?
Bennett Landman, Xue Yang, Hakmook Kang

14:45 - 15:00 Sparse Patch-Based Label Fusion for Multi-Atlas Segmentation.
Daoqiang Zhang, Qimiao Guo, Guorong Wu, Dinggang Shen

15:00 - 15:15 How Many Templates Does it Take for a Good Segmentation?: Error Analysis in Multiatlas Segmentation as a Function of Database Size.
Suyash Awate, Peihong Zhu, Ross Whitaker

Juan Eugenio Iglesias, Mert Rory Sabuncu, Koen Van Leemput

15:30 - 16:00 Coffee Break

16:00 - 17:30 Oral Session 3
Chair: Bennett Landman (Vanderbilt University)

16:00 - 16:15 Spatial Normalization of Diffusion Tensor Images with Voxel-Wise Reconstruction of the Diffusion Gradient Direction.
Wei Liu, Xiaozheng Liu, Xiaofu He, Zhenyu Zhou, Ying Wen, Yongdi Zhou, Bradley Peterson, Dongrong Xu

16:15 - 16:30 Automatic Population HARDI White Matter Tract Clustering by Label Fusion of Multiple Tract Atlases.
Yan Jin, Yonggang Shi, Liang Zhan, Junming Li, Greig de Zubicaray, Katie McMahon, Nicholas Martin, Margaret Wright, Paul Thompson

16:30 - 16:45 Comparative Characterisation of Susceptibility Weighted MRI for Brain White Matter Lesions in MS.
Maddalena Strumia, Constantin Anastasopoulos, Irina Mader, Jürgen Hennig, Li Bai, Stathis Hadjidemetriou

16:45 - 17:00 Constructing Fiber Atlases for Functional ROIs via fMRI-guided DTI Image Registration.
Tuo Zhang, Lei Guo, Hanbo Chen, Xintao Hu, Kaiming Li, Tianming Liu

17:00 - 17:15 Award announcement and closing remarks
**October 1st**

**MCBR-CDS** (8:45 – 17:30) - Acropolis, Room Gallieni 6

**MICCAI 2012 workshop on Medical Content-Based Retrieval for Clinical Decision Support**


Organizers: Hayit Greenspan, Henning Müller, Tanveer Syeda-Mahmood

08:45 - 09:00  Opening

09:00 - 09:50  **Invited Lecture 1:** Heterogeneous information retrieval from medical databases

Gwenole Quellec

09:50 - 10:30  **3D methods**

Exploiting 3D part-based analysis, description and indexing to support medical applications.

Chiara Eva Catalano, Francesco Robbiano, Patrizia Parascandolo, Lorenzo Cesario, Loris Vosilla, Francesca Barbieri, Michela Spagnuolo, Gianni Viano, Marco Amedeo Cimmino

Skull Retrieval for Craniosynostosis Using Sparse Logistic Regression Models.

Shulin Yang, Linda Shapiro, Michael Cunningham, Matthew Speltz, Craig Birgfeld, Indriyati Atmosukarto, Su-In Lee

10:30 - 11:00  Coffee break

11:00 - 12:30  **3D/4D data retrieval**

Retrieval of 4D Dual Energy CT for Pulmonary Embolism Diagnosis.

Antonio Foncubierta-Rodriguez, Alejandro Vargas, Alexandra Platon, Pierre-Alexandre Poletti, Henning Muller, Adrien Depeursinge

Immediate ROI Search for 3-D Medical Images.

Karen Simonyan, Marc Modat, Sebastien Ourselin, Antonio Criminisi, Andrew Zisserman

Synergy of 3D SIFT and Sparse Codes for Classification of viewpoints from Echocardiogram Videos.

Yu Qian, Lianyi Wang, Chunyan Wang, Xiaohong Gao

Assessing the Classification of Liver Focal Lesions by Using Multi-phase Computer Tomography Scans.

Aureline Quatrehomme, Ingrid Millet, Denis Hoa, Gerard Subsol, William Puech

12:30 - 14:00  Lunch

14:00 - 14:50  **Invited Lecture II:** VISCERAL: Towards Large Data in Medical Imaging Challenges and Directions.

Georg Langs

14:50 - 15:30  **Visual features**

Customised Frequency Pre-Filtering in a Local Binary Pattern- Based Classification of Gastrointestinal Images.

Georg Wimmer, Andreas Uhl

Bag of Colors for Biomedical Document Image Classification.
15:30 - 16:00  **Coffee break**

16:00 - 16:30  **Multimodal retrieval**

Spyridon Stathopoulos, Theodore Kalamboukis

Multimedia Retrieval in a Medical Image Collection: Results Using Modality Classes (short paper).
Angel Castellanos, Ana Garc’a-Serrano, Xaro Benavent, Joan Benavent

16:30 - 17:30  **PANEL + Open Discussion:**

What is the CBIR role in Medical Decision Support?
MeshMed (9:00 – 17:00) - Novotel, Room Cheret

MICCAI 2012 workshop on Mesh Processing in Medical Image Analysis

http://www2.imm.dtu.dk/projects/MeshMed/

Organizers: Rasmus R. Paulsen, Joshua A. Levine, Nikos P. Chrisochoides, Sylvain Prima, Ross T. Whitaker, Yongjie Zhang

09:00 - 09:05  Welcome
09:05 - 09:50  Invited Plenary Talk: Mesh and Surface Processing. Leif Kobbelt
09:50 - 10:10  Robust and Scalable Interactive Freeform Modeling of High Definition Medical Images.
Noura Faraj, Jean-Marc Thiery, Isabelle Bloch, Nadège Varsier, Joe Wiart and Tamy Boubekeur
Xinyi Cui, Shaoting Zhang, Yiqiang Zhan, Mingchen Gao, Junzhou Huang and Dimitris Metaxas
10:30 - 11:00  Coffee Break
11:00 - 11:50  Invited Plenary Talk: Biomechanical and Electrophysiological Modeling
Andrew McCulloch
11:50 - 12:10  Automatic Fracture Reduction.
Thomas Albrecht and Thomas Vetter
12:10 - 12:30  Age-Related Changes in Vertebral Morphometry by Statistical Shape Analysis.
Tristan Whitmarsh, Luis Del Rio Barquero, Silvana Di Gregorio, Jorge Malouf Sierra, Ludovic Humbert and Alejandro Frangi
12:30 - 14:00  Lunch and Poster Session
Partition Cortical Surfaces into Supervertices: Method and Application.
Gang Li, Jingxin Nie and Dinggang Shen
Volumetric Real-Time Particle-Based Representation of Large Unstructured Tetrahedral Polygon Meshes.
Philip Voglreiter, Markus Steinberger, Dieter Schmalstieg and Bernhard Kainz
Automatic Boundary Evolution Tracking via a Combined Level Set Method and Mesh Warping Technique: Application to Hydrocephalus.
Jeonghyung Park, Suzanne Shontz and Corina Drapaca
Simplified Reeb Graph as Effective Shape Descriptor for the Striatum.
Antonietta Pepe, Laura Brandolini, Marco Piastra, Juha Koikkalainen, Jarmo Hietala and Jussi Tohka
Feature-Preserving, Multi-Material Mesh Generation using Hierarchical Oracles.
Max Kahnt, Heiko Ramm, Hans Lamecker and Stefan Zachow
Robust Shape Correspondence via Spherical Patch Matching for Atlases of Partial Skull Models.
Boris Gutman, Ryan McComb, Won Moon and Paul Thompson

Synthesis of Realistic Subcortical Anatomy with Known Surface Deformations.
Yi Gao and Sylvain Bouix

Topology aware Quad Dominant Meshing for Vascular Structures.
Dominik Sibbing, Hans-Christian Ebke, Kai Ingo Esser, and Leif Kobbelt

14:00 - 14:50 Invited Plenary Talk: Pierre Alliez - Geometry Processing

14:50 - 15:10 Automatic Meshing of Femur Cortical Surfaces from Clinical CT Images.
Ju Zhang, Duane Malcolm, Jacqui Hislop-Jambrich, C David L Thomas and Poul Nielsen

Rasmus R. Jensen, Oline Olesen, Rasmus R. Paulsen, Mike Van Der Poel and Rasmus Larsen

15:30 - 16:00 Coffee Break

16:00 - 16:20 Automated Segmentation of Cerebral Aneurysms Based on Conditional Random Field and Gentle Adaboost.
Hong Zhang, Yuanfeng Jiao, Jessica Zhang and Kenji Shimada

Youngjun Kim, Seungbin Lee, Frederick Roy, Deukhee Lee, Laehyun Kim and Sehyung Park

16:40 - 17:00 Best paper prize, Discussion, and Workshop closing
MLMI (8:45 – 17:45) - Acropolis, Hermes Auditorium
MICCAI 2012 workshop on Machine Learning in Medical Imaging

http://miccai-mlmi.uchicago.edu/
Organizers: Fei Wang, Dinggang Shen, Pingkun Yan, Kenji Suzuki

08:45 - 09:00 Opening Remarks

09:00 - 10:30 Morning Sessions 1: Plenary Talk
Prof. Anand Rangarajan, University of Florida

10:30 - 11:00 Coffee break

11:00 - 12:30 Morning Sessions 2: Image Segmentation
Transductive Prostate Segmentation for CT Image Guided Radiotherapy
Yinghuan Shi, Shu Liao, Yaozong Gao, Daoqiang Zhang, Yang Gao, Dinggang Shen
Model-Driven Centerline Extraction for Severely Occluded Major Coronary Arteries.
Yefeng Zheng, Jianhua Shen, Huseyin Tek, Gareth Funka-Lea
A Novel 3D Joint MGRF Framework for Precise Lung Segmentation.
Simultaneous Registration and Segmentation by L1 Minimization.
Pratik Shah, Mithun Das Gupta
Annegreet Van opbroek, Arfan Ikram, Meike Vernooij, Marleen de Bruijine

12:30 - 14:00 Lunch & posters
Group Sparsity Constrained Automatic Brain Label Propagation.
Shu Liao, Daoqiang Zhang, Pew Thian Yap, Guorong Wu, Dinggang Shen
Sparse Patch-guided Deformation Estimation for Improved Image Registration.
Minjeong Kim, Guorong Wu, Dinggang Shen
Santiago Suniaga, Rene Werner, Andre Kemmling, Michael Groth, Jens Fiehler, Nils Daniel Forkert
Data Driven Constraints for the SVM.
Sune Darkner, Line Clemmesen
Towards improving the accuracy of sensorless freehand 3D ultrasound by learning.
Juliette Conrath, Catherine Laporte
Use of Pattern-Information Analysis in Vision Science: a Pragmatic Examination.
Ruiz Mathieu, jean-Michel Hupé, Michel Dojat
Human Age Estimation with Surface-based Features from MRI Images.
Jieqiong Wang, Dai Dai, Meng Li, Jing Hua, Huiguang He
Biomedical Images Classification by Universal Nearest Neighbours Classifier using Posterior Probability.
Roberto D’Ambrosio, Paolo Soda, Michel Barlaud, Wafa Bel Ha J Ali, Richard Nock, Frank Nielsen

On the creation of generic fMRI feature networks using 3-D moment invariants.
Loizos Markides, Duncan Gillies

A Localized MKL method for brain classification with known intra-class variability.
Aydın Ulaş, Mehmet Gönen, Umberto Castellani, Vittorio Murino, Marcella Bellani, Michele Tansella, Paolo Brambilla

Learning to locate cortical bone in MRI.
Gerardo Hermosillo, Vikas Raykar, Sean Zhou

Combining Multiple Image Segmentations by Maximizing Expert Agreement.
Joni-Kristian Kamarainen, Lasse Lensu, Tomi Kauppi

Cardiac LV and RV Segmentation Using Mutual Context Information.
Dwarikanath Mahapatra

Non-parametric Density Modeling and Outlier Detection in Medical Imaging Datasets.
Virgile Fritsch, Gael Varoquaux, Jean-Baptiste Poline, Bertrand Thirion

Gradient Projection Learning for Parametric Nonrigid Registration.
Stefan Pszczolkowski, Luis Pizarro, Declan O’Regan, Daniel Rueckert

Integrating Statistical Shape Models into a Graph Cut Framework for Tooth Segmentation.
Johannes Keustermans, Dirk Vandermeulen, Paul Suetens.

A random forest based approach for one class classification in medical imaging.
Chesner Désir, Simon Bernard, Caroline Petitjean, Laurent Heutte

Computer Aided Skin Lesion Diagnosis with Humans in the Loop.
Orod Razeghi, Guoping Qiu, Hywel Williams, Kim Thomas

14:00 - 15:30 Afternoon Sessions 1: Computer-aided Detection/Diagnosis

MRI confirmed prostate tissue classification with Laplacian eigenmaps of ultrasound RF spectra.
Mehdi Moradi, Christian Wachinger, Andriy Fedorov, William Wells, tina Kapur, Luciant Wolfsberg, Paul Nguyen, Clare Tempany

Hierarchical Ensemble of Multi-level Classifiers for Diagnosis of Alzheimer’s Disease.
Manhua Liu, Daoqiang Zhang, Pew-Thian Yap, Dinggang Shen

Nonlinear Discriminant Graph Embeddings for Detecting White Matter Lesions in FLAIR MRI.
Samuel Kadoury, Guray Erus, Christos Davatzikos

Description and Classification of Confocal Endomicroscopic Images for the Automatic Diagnosis of Inflammatory Bowel Disease.
Sara Couceiro, João Barreto, Pedro Figueiredo, Paulo Freire
Learning to rank from medical imaging data.
Fabian Pedregosa, Alexandre Gramfort, Gael Varoquaux, Bertrand Thirion, Elodie Cauvet, Christophe Paller

15:30 - 16:00 Coffee break

16:00 - 17:30 Afternoon Sessions 2: Classification, and Registration

Dense Deformation Reconstruction via Sparse Coding.
Yonghong Shi, Guorong Wu, Zhijian Song, Dinggang Shen

Quality Classification of Microscopic Imagery with Weakly Supervised Learning.
Xinghua Lou, Luca Fiaschi, Ullrich Koethe, Fred Hamprecht

Graph-based inter-subject classification of local fMRI patterns.
Sylvain Takerkart, Guillaume Auzias, Daniele Schon, Bertrand Thirion, Liva Ralaivola

Learning correspondences in knee MR images from the Osteoarthritis Initiative.
Ricardo Guerrero, Claire Donoghue, Luis Pizarro, Daniel Rueckert

Finding Deformable Shapes by Correspondence-free Instantiation and Registration of Statistical Shape Models.
Weiguo Xie, Steffen Schumann, Jochen Franke, Paul Alfred Grützner, Lutz-Peter Nolte, Guoyan Zheng

17:30 - 17:45 Closing Remarks
PaPi (9:00 – 13:30) - Novotel, Room Garibaldi

MICCAI 2012 workshop on Perinatal and Paediatric Imaging

http://www.eng.ox.ac.uk/PaPi2012

Organizers: Maria Murgasova, François Rousseau, Daniel Rueckert, Julia A Schnabel, Colin Studholme, Lilla Zöllei, Guido Gerig

09:00 - 09:05  Introduction
Julia Schnabel

09:05 - 10:30  Oral session 1: Brain development in the fetus, neonate & infant
Chair: Maria Murgasova

09:05 - 09:22  Age dependent fetal MR segmentation using manual and automated approaches.
Robert Wright, Deniz Vatansever, Vanessa Kyriakopoulou, Christian Ledig, Robin Wolz, Ahmed Serag, Daniel Rueckert, Mary Rutherford, Jo Hajnal and Paul Aljabar

09:22 - 09:39  Neonatal brain segmentation using second order neighborhood information.
Christian Ledig, Paul Aljabar, Robert Wright, Ahmed Serag and Daniel Rueckert

09:39 - 09:56  3D vs. 2D Surface Shape Analysis of the Corpus Callosum in Premature Neonates.
Yalin Wang, Ashok Panigrahy, Jie Shi, Rafael Ceschin, Zhi Nie, Marvin D. Nelson and Natasha Lepore

09:56 - 10:13  A cortical surface analysis of very preterm infants on term-equivalent age MRI.
Andrew Melbourne, Manuel Jorge Cardoso, Giles Kendall, Nicola Robertson, Neil Marlow and Sebastien Ourselin

10:13 - 10:30  Longitudinal lateral ventricle morphometry related to prenatal measures as a biomarker of normal development.
Amanda E. Lyall, Beatriz Paniagua, Zhaohua Lu, Hongtu Zhu, Feng Shi, Weili Lin, Dinggang Shen, John H. Gilmore and Martin Styner

10:30 - 11:00  Coffee break

11:00 - 11:34  Oral session 2: Ultrasound of the fetal organ development
Chair: François Rousseau

11:00 - 11:17  Ultrasound Image Segmentation of the Fetal Abdomen: a Semi-Supervised Patch-Based Approach.
Anca Ciurte, Sylvia Rueda, Xavier Bresson, Sergiu Nedevschi, Aris T. Papageorghiou, J. Alison Noble and Meritxell Bach Cuadra

11:17 - 11:34  Estimation of fetal aorta intima-media thickness from ultrasound examination.
Elisa Veronese, Erich Cosmi, Silvia Visentin, Enea Poletti and Ernio Grisani

11:35 - 12:30  Key-note: Prenatal Brain
Nadine Girard
12:30 - 13:30

**Lunch and Posters**

**Fetal brain MRI**
A unified approach for motion-estimation and super-resolution reconstruction from structural Magnetic Resonance Imaging on moving subjects.
Mads Fogtmann, Teresa Chapman, Kio Kim, Sharmisthaa Seshamani and Colin Studholme

**Fully Automated Brain Extraction and Orientation in Raw Fetal MRI.**
Mark Ison, René Donner, Eva Dittrich and Georg Langs

**Neonatal atlases**
A Realistic High Resolution Digital Phantom of the Neonatal Brains.
Kamran Kazemi, Hojat Allah Jafari, Mahmoud Rashidpour, Mohammad Sadegh Helfroush, Nasrin Golshaeyan, Reinhard Grebe and Fabrice Wallois

A 3D atlas of MR diffusion parameters in the neonatal brain.

**DTI of the infant brain**
Fiber-tract based Analysis of Brain Damage and Neurodevelopment in Intrauterine Growth Restriction.
Emma Muñoz-Moreno, Elisenda Eixarch, Dafnis Batalle and Eduard Gratacos

Probabilistic Diffusion Tractography-based Parcellation of the Human Infant Thalamus.
Lilla Zollei and Aleksandar Petrovic

**Ultrasound of the fetal organ development**
Ultrasound-Based Fetal Arm Adipose Tissue Thickness Quantification Across Gestation.
Sylvia Rueda, Caroline L. Knight, Aris T. Papageorghiou and J. Alison Noble
PROMISE-Ch
(8:30 – 18:00, jointly held with BraTS-Ch) - Acropolis, Room Gallieni 5
MICCAI 2012 challenge on Prostate Segmentation from T2-weighted MRI

http://promise12.grand-challenge.org/

Organizers: Dean Barrat, Jason Dowling, Henkjan Huisman, Anant Madabhushi, Bram van Ginneken, Sjoerd Kerkstra, Geert Litjens, Rob Toth

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:30 -</td>
<td>PROMISE Data distribution</td>
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<tr>
<td>09:00 -</td>
<td>Joint PROMISE and BRaTS introduction</td>
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<tr>
<td>09:15 -</td>
<td>Computing (concurrent with BRATS short orals) / Posters</td>
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<td>10:30 -</td>
<td>Coffee break</td>
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<tr>
<td>11:00 -</td>
<td>Posters</td>
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<tr>
<td>12:00 -</td>
<td>Joint PROMISE and BRaTS clinical talks</td>
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<td>BRATS Imaging workflow in daily clinical routine - benefits and pitfalls of advanced brain tumor imaging.</td>
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<td>Prof. Roland Wiest, Bern University Hospital</td>
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<td>PROMISE Clinical aspects of prostate imaging.</td>
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<td>Francois Cornud M.D., Paris</td>
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<td>13:00 -</td>
<td>Lunch</td>
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<td>14:00 -</td>
<td>Oral session: Strategies for prostate segmentation from T2-weighted MR images</td>
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<tr>
<td>14:00 -</td>
<td>Region-Specific Hierarchical Segmentation of MR Prostate Using Discriminative Learning.</td>
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<td>Neil Birkbeck, Jingdan Zhang, S. Kevin Zhou</td>
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<td>An automatic multi-atlas based prostate segmentation using local appearance-specific atlases and patch-based voxel weighting.</td>
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<td>Qinquan Gao, Daniel Rueckert, Philip «Eddie» Edwards</td>
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<td>Fully Automatic Segmentation of the Prostate using Active Appearance Models.</td>
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<td>Graham Vincent, Gwenael Guillard, and Mike Bowes</td>
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<td>15:00 -</td>
<td>Posters</td>
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<tr>
<td>16:00 -</td>
<td>Joint PROMISE and BRaTS discussion on metrics and clinical relevance</td>
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<tr>
<td>17:00 -</td>
<td>Challenge results and discussion</td>
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Posters

Automatic Prostate Segmentation in MR Images with a Probabilistic Active Shape Model.
Matthias Kirschner, Florian Jung, Stefan Wesarg

Prostate MR image segmentation using 3D Active Appearance Models.
Bianca Maan, Ferdi van der Heijden

A Stochastic Approach to Prostate Segmentation in MRI.
Soumya Ghose, Jhimli Mitra, Arnau Oliver, Robert Marti, Xavier Llado, Jordi Freixenet, Joan C. Vilanova, Desire Sidibe, Fabrice Meriaudeau

Smart Paint - A New Interactive Segmentation Method Applied to MR Prostate Segmentation.
Filip Malmberg, Robin Strand, Joel Kullberg, Richard Nordenskjold, Ewert Bengtsson

Deformable Landmark-Free Active Appearance Models: Application to Segmentation of Multi-Institutional Prostate MRI Data.
Robert Toth, Anant Madabhushi

An Efficient Convex Optimization Approach to 3D Prostate MRI Segmentation with Generic Star Shape Prior.
Jing Yuan, Wu Qiu, Eranga Ukwatta, Martin Rajchl, Yue Sun, Aaron Fenster

A multi-atlas approach for prostate segmentation in MR images.
Geert Litjens, Nico Karssemeijer and Henkjan Huisman

Yangming Ou, Jimit Doshi, Guray Erus, Christos Davatzikos
October 1st

**STENT** (14:00 – 17:30) - Novotel, Room Garibaldi

**MICCAI 2012 workshop on Computer Assisted Stenting**

[http://campar.in.tum.de/STENT2012/WebHome](http://campar.in.tum.de/STENT2012/WebHome)

Organizers: Stefanie Demirci, Gozde Unal, Su-Lin Lee, Petia Radeva

**14:00 - 14:05** Welcome and Introductory Remarks

**14:05 - 14:45** Clinical Challenges for Computer Assistance During StenEng Procedures. Dr. med. Reza Ghotbi

**14:45 - 15:30** Poster Session

Chair: Petia Radeva

**14:45 - 14:57** 1 minute Poster Teasers

**14:57 - 15:30** Poster Discussions


Ancong Wang, Jeroen Eggermont, Niels Dekker, Johan H. C. Reiber and Jouke Dijkstra

Virtual deployment of pipeline flow diverters in cerebral vessels with aneurysms to understand thrombosis.

Leonardo Flórez-Valencia, Eduardo E. D vila Serrano, Juan G. Riveros Reyes, Olivier Bernard, Jonas Latt, Orestis Malaspinas, Bastien Chopard, Guy Courbebaisse and Maciej Orkisz

Fast Segmentation of Abdominal Aortic Aneurysms for Endovascular Repair Planning and Follow-up.

Ivan Macia, Maria Arenas, Jon Haitz Legarreta, Isabelle Robin, Manuel Graña and Sabarinath Rajasekharan

Rapid Prototyping of Silicone-based Phantom Models for Stent Simulation Validation.

Christoph Russ, Michael Gessat, Gabor Szekely and Volkmar Falk

Motion Adapted Catheter Navigation with Real-Time Instantiation and Improved Visualisation.

Su-Lin Lee, Ka-Wai Kwok, Lichao Wang, Celia Riga, Colin Bicknell and Guang-Zhong Yang

Role of 3D/3D and 2D/3D Registration in Computer Assisted Stenting Procedures.

Gouthami Chintalapani and Ponraj Chinnadurai

Computational Methods of Modeling Stent Deployment in the Coronary Artery.

Nenad Filipovic, Dalibor Nikolic, Zarko Milosevic, Themis Exarchos, Dimitrios I Fotiadis and Oberdan Parodi

2D+t/3D+t CTA-XA registration using population-based motion estimates.

Nora Baka, Coert Metz, Carl Schultz, Lisan Neefjes, Robert Jan van Geuns, Boudewijn P.F. Lelieveldt, Wiro Niessen, Marleen de Bruijne and Theo van Walsum
Multi-image based stent visibility enhancement.
Yunqiang Chen, Ying Zhu, Ti-Chiun Chang and Tong Fang

Intracranial stent visualization for image guided interventions and therapy.
Daniel Ruijters, Peter van de Haar, Ruben Roijers, Niels J. Noordhoek, Jan Timmer and Drazenko Babic

Reconstruction of Stent Induced Loading Forces on the Aortic Valve Complex.
Raoul Hopf, Michael Gessat, Volkmar Falk and Edoardo Mazza

Stent Strut Detection by Classifying a Wide Set of IVUS Features.
Rui Hua, Oriol Pujol, Francesco Ciompi, Marina Alberti, Simone Balocco, Fina Mauri and Petia Radeva

15:30 - 16:00 Coffee Break
16:00 - 16:30 Oral Session 1
Chair: Gozde Unal

16:00 - 16:15 Influence of vascular morphology on hemodynamic changes after flow diverter placement in saccular intracranial aneurysms.
Ignacio Larrabide, Arjan J Geers, Martha L Aguilar, Hernan G Morales, Daniel A Rufenacht and Alejandro Frangi

16:15 - 16:30 Towards Predicting the Effects of Stent-Grafting on the Motion of the Thoracic Aorta.
Ernst Schwartz, Johannes Holfeld, Martin Czerny, Christian Loewe and Georg Langs

16:30 - 17:00 Oral Session 2
Chair: Su-Lin Lee

16:30 - 16:45 Model-based Postoperative Modeling of Stent-Based Devices from CT: Application to TAVI.
Ingmar Voigt, Etienne Assounou Mengue, Razvan Ionasec, Tommaso Mansi, Bogdan Georgescu, Joachim Hornegger and Dorin Comaniciu

16:45 - 17:00 Landmark-based registration of OCT image sequences for the follow-up of stent coverage and apposition.
Laurent Sarry, Romain Dumas, Florian Dubuisson, Emilie Péry, Nicolas Combaret and Pascal Motreff

17:00 - 17:25 PANEL DISCUSSION
Moderation: Stefanie Demirci
Panel Members: Dr. med. Reza Ghotbi (Klinikum Muenchen Pasing, Germany), Dr. Yunqiang Chen (Siemens Corporate Research, US), Frode Manstad-Hulaas, MD (St Olavs Hospital, Norway), Dr. Vincent Bismuth (GE Healthcare, France), Dr. Juan Rigla (Boston Sci., USA)

17:25 - 17:30 Final Remarks
October 1st

**STIA** (08:40 – 17:30) - Acropolis, Room Gallieni 4

**MICCAI 2012 workshop on Spatiotemporal Image Analysis for Longitudinal and Time-Series Image Data**

http://www.sci.utah.edu/stia2012-home.html

Organizers: Guido Gerig, Stanley Durrleman, Tom Fletcher, Marc Niethammer

08:40 - 09:00  **Workshop opening.**
  G. Gerig, T. Fletcher, S. Durrleman, M. Niethammer

09:00 - 09:50  **Plenary talk.**
  Alain Trouvé

09:50 - 10:30  **Longitudinal Registration and Transport**
  09:50 - 10:10  Spatio-temporal regularization for longitudinal registration to an unbiased 3D individual template.
  Nicolas Guizard, Vladimir Fonov, Daniel Garca-Lorenzo, Brengre Aubert-Broche, Simon Eskildsen, D. Louis Collins

10:10 - 10:30  Local versus global descriptors of hippocampus shape evolution for Alzheimers longitudinal population analysis.
  Jean-Baptiste Fiot, Laurent Risser, Laurent Cohen, Jurgen Fripp, Francois-Xavier Vialard

10:30 - 11:00  **Coffee break**

11:00 - 11:40  **Spatio-temporal Analysis of Shapes**
  Manasi Datar, Prasanna Muralidharan, Abhishek Kumar, Sylvain Gouttard, Joseph Piven, Guido Gerig, Ross Whitaker, P. Thomas Fletcher

11:20 - 11:40  Unsupervised Learning of Shape Complexity: Application to Brain Development
  Ahmed Serag, Ioannis Gousias, Antonios Makropoulos, Paul Aljabar, Joseph Hajnal, James Boardman, Serena Counsell, Daniel Rueckert

11:40 - 12:20  **Spatio-temporal Analysis under Appearance Changes**
  11:40 - 12:00  Spatial-temporal pharmacokinetic model based registration of 4D brain PET data.
  Jieqing Jiao, Graham Searle, Andri Tziortzi, Cristian Salinas, Roger Gunn, Julia Schnabel

12:00 - 12:20  Predicting the Location of Glioma Recurrence After a Resection Surgery.
  Erin Stretton, Emmanuel Mandonnet, Ezequiel Geremia, Bjoern H. Menze, Herve Delingette, Nicholas Ayache

12:20 - 12:30  **Poster Teasers**

12:30 - 13:30  **Lunch Break**
13:30 - 14:30  **Poster Viewing**

**4D Segmentation of Longitudinal Brain MR Images with Consistent Cortical Thickness Measurement**
Li Wang, Feng Shi, Gang Li, Dinggang Shen

**Elastic Demons: Characterizing Cortical Development in Neonates Using an Implicit Surface Registration**
Paul Pearlman, Ivana Isgum, Karina Kersbergen, Manon Benders, Max Viergever, Josien Pluim

A new framework for analyzing structural volume changes of longitudinal brain MRI data
Berengere Aubert-Broche, Vladimir Fonov, Daniel Garcia Lorenzo, Abderazzak Mouiha, Nicolas Guizard, Pierrick Coupe, Simon Eskildsen, D. Louis Collins

Which reorientation framework for the atlas-based comparison of cardiac image sequences?
Nicolas Duchateau, Mathieu De Craene, Xavier Pennec, Beatriz Merino, Marta Sitges, Bart Bijnens

**Tracking Metastic Brain Tumors In Longitudinal Scans via Joint Image Registration and Labeling**
Nicha Chitphakdithai, Veronica Chiang, James Duncan

14:30 - 15:30  **Plenary talk.**
Alexandre Dufour

15:30 - 16:00  **Coffee break**

16:00 - 16:40  **Spatio-temporal Imaging for Biology**

16:00 - 16:20  **Motion-Based Segmentation for Cardiomyocyte Characterization.**
Xiaofeng Liu, Dirk Padfield

16:20 - 16:40  **Multi-temporal Globally-Optimal Dense 3-D Cell Segmentation & Tracking from Multi-photon Time-lapse Movies of Live Tissue Microenvironments.**
Arunachalam Narayanaswamy, Amine Merouane, Antonio Peixoto, Ena Ladi, Paul Herzmark, Ulrich von Andrian, Ellen Robey, Badrinath Roysam

16:40 - 17:30  **Discussions and Conclusion**
Program of MICCAI 2012 Workshops, Challenges and Tutorials

Friday October 5th
Friday October 5
Novotel level 1
Workshops / Challenges / Tutorials & Posters

Coffee break
To Lobby

Coffee break
Acropolis level 2
Friday October 5 Workshops / Challenges / Tutorials & Posters

- STMI-1 to 19
- HIMA
October 5th

AE-CAI (8:30 – 17:30) – Novotel, Room Chagall
MICCAI 2012 workshop on Augmented Environments & Computer-Assisted Interventions

http://ae-cai2012.imaging.robarts.ca/
Organizers: Cristian A. Linte, David R. Holmes III, Marie-Odile Berger, John Moore, Elvis Chen

08:30 - 08:55  Registration, Poster Setup & Demo Setup
08:55 - 09:05  Welcome & Opening Remarks
09:05 - 09:50  Keynote Address
Dr. Richard A. Robb, PhD
09:50 - 10:30  Oral Session I: Endoscopy Applications
Estimating the Cook-Torrance BRDF Parameters In-Vivo from Laparoscopic Images.
Abed Malti, Adrien Bartoli
Endoscopic Image Overlay for the Targeting of Hidden Anatomy in Laparoscopic Visceral Surgery
Kate Gavaghan, Matteo Fusaglia, Guido, François Pugin, Francesco Volonté, Nicolas Buchs, Stefan Weber

10:30 - 11:00  Coffee Break & Poster Viewing
11:00 - 12:00  Oral Session II: Intra-operative Imaging and Modeling Applications
Cristian Linte, Jon Camp, David Holmes III, Maryam Rettmann, Richard Robb
Visualization of Organ Motion during Breathing from 4D Datasets.
Markus Müller, Athanasios Karamalis, Nassir Navab
The colored X-Rays.
André Aichert, Matthias Wieczorek, Jian Wang, Matthias Kreiser, Lejing Wang, Pascal Fallavollita, Nassir Navab

12:00 - 12:30  Poster Teasers & Interactive Demos
12:30 - 14:00  Lunch & Poster Session
14:00 - 14:50  Keynote Address: Dr. Rene Anxionnat, MD
14:50 - 15:30  Oral Session III: Camera and Video-based Augmented Reality Applications
Kamyar Abhari, John Baxter, Elvis Chen, Chris Wedlake, Roy Eagleson, Terry Peters, Sandrine de Ribaupierre
Development of new augmented reality function using intraperitoneal multi-view camera.
Naoki Suzuki, Asaki Hattori
### 15:30 - 16:00  
**Coffee Break & Poster Viewing**

### 16:00 - 17:00  
**Oral Session IV: Applications in Surgical Robotics and Control**

- **Second-Generation Hand-Held Force Magnifier for Surgical Instruments.**  
  George, Randy Lee, Vikas Shivaprabhu, John Galeotti, Roberta Klatzky, Samantha, Joel Schuman, Ralph Hollis, Mel Siegel

- **Use of a passive coordinate measurement arm for tracking a rigid endoscope in augmented reality surgical navigation.**  
  Samuel Jeffrey, Joshua Dao, Min Chen, Gerardo Ganzalez-Garcia, Steve Shickell, Rudy Lapeer

- **A Simulator for Assessing Control Strategies for a Novel Flexible Robot in No-Scar Surgery.**  
  Antonio De Donno, Florent Nageotte, Philippe, Laurent Goffin, Michel de Mathelin

### 17:00 - 17:25  
**Discussion & AE-CAI Panel**

### 17:25 - 17:30  
**Closing Remarks**

### Poster Presentations

- **Traceable Particle Swarm Optimization for Electromagnetically Navigated Bronchoscopy.**  
  Xiongbiao Luo, Takayuki Kitasaka, Kensaku Mori

- **AR-enhanced registration of intra- and preoperative models in a laparoscopic setting.**  
  Sebastian Röhl

- **Distributed Vision System and Virtual View for Laparoscopic Surgery.**  
  Tamadazte Brahim, Voros Sandrine, Boschet Christophe, Cinquin Philippe, Fouard Céline

- **Generation of Synthetic 4D Cardiac CT Images by Deformation from Cardiac Ultrasound.**  
  Feng Li, James White, Martin Rajchl, Aashish Goela, Terry Peters

- **Interactive OCT Annotation and Visualization for Vitreoretinal Surgery.**  
  Marcin Balicki, Rogerio Richa, Balazs Vagvolgyi, Peter Kazanzides, Peter Gehlbach, James Handa, Jin Kang, Russell Taylor

- **Real-time, Robust, and Accurate Recovery of Augmented-Reality Display After Occlusions in Laparoscopic Videos.**  
  Gustavo Puerto-Souza, Gian-Luca Mariottini

- **Automated detection of mediastinal lymph nodes for assistance of transbronchial needle aspiration.**  
  Takayuki Kitasaka, Mitsuhiro Kishimoto, Masahiro Oda, Shingo Iwano, Kensaku Mori

- **Second-Generation Hand-Held Force Magnifier for Surgical Instruments (accompanied by live device demo).**  
  George Stetten, Randy Lee, Vikas Shivaprabhu, John Galeotti, Roberta Klatzky, Samantha Horvath, Joel Schuman, Ralph Hollis, Mel Siegel
BCN-tut (8:45 – 17:30) – Novotel, Room Garibaldi
MICCAI 2012 tutorial on Brain Connectivity Networks: Biology, Imaging and Beyond

https://www.rad.upenn.edu/sbia/MICCAI_Connectivity_Tutorial_2012/index.html
Organizers: Ragini Verma, Rachid Deriche

08:45 - 09:00 Opening Remarks
R. Verma and R. Deriche

09:00 - 10:30 Biology and Modalities
09:00 - 09:30 How do functional, effective and structural connectivity relate to each other?
Simon Eickhoff
09:30 - 10:00 Modeling fMRI correlation structure: is brain functional connectivity decomposable into networks?
Bertrand Thirion
10:00 - 10:30 MEG: Biology and Connectivity.
Timothy Roberts

10:30 - 11:00 Coffee + Questions

11:00 - 12:00 Multimodal Parcellation
11:00 - 11:30 Diffusion MRI based parcellation as prior knowledge in EEG/MEG source reconstruction.
Alfred Anwander
11:30 - 12:00 A nested cortex parcellation combining analysis of MEG forward problem and diffusion MRI tractography.
Maureen Clerc

12:00 - 14:00 Lunch

14:00 - 15:30 Building and Analyzing Connectivity Networks
14:00 - 14:30 Recent developments in data acquisition and modelling of diffusion MRI data for human connectomics.
Stamatios Sotiropoulos
14:30 - 15:00 Network analysis of functional connectivity.
Satoru Hayasaka
15:00 - 15:30 Graph theoretical analysis of structural and functional connectivity MRI in normal and pathological brain networks.
Maxime Guye

15:30 - 16:00 Coffee + Questions

16:00 - 17:00 Quantifying and qualifying connectivity
16:00 - 16:30 Weighted and spatial characterization of complex functional brain networks
Mikail Rubinov
16:30 - 17:00  Quality Control of Tractography-based Brain Connectivity Matrices.
   Alard Roebroeck

17:00 - 17:30  Concluding Remarks qualifying connectivity
   R. Verma and R. Deriche, with all speakers
CDMRI (8:45 – 18:00) – Novotel, Room Cheret
MICCAI 2012 workshop on Computational Diffusion MRI

http://cmic.cs.ucl.ac.uk/cdmri12/
Organizers: Eleftheria Panagiotaki, Lauren O’Donnell, Thomas Schultz, Gary Hui Zhang

08:45 - 09:00   Welcome  
09:00 - 09:45   Invited Talk I  
Carl-Fredrik Westin (Harvard Medical School, USA)  
09:45 - 10:30   Invited Talk II  
Ivana Drobnjak (UCL, UK)  
10:30 - 11:00   Coffee Break  
11:00 - 12:30   Oral Session I: Tractography and applications  
Utilising measures of fiber dispersion in white matter tractography.  
Matthew C Rowe et al. University College London, UK  
Simultaneous ODF Estimation and Robust Probabilistic Tractography from HARDI.  
Hasan Cetingul et al. Siemens Corporation, USA  
A Unified Tractography Framework for Comparing Diffusion Models on Clinical Scans.  
Christian Baumgartneri et al. Brigham and Womens Hospital, USA  
The Effect of Reorientation of the Fibre Orientation Distribution on Fibre Tracking.  
Daan Christiaens et al. Universiy of Leuven, Belgium  
12:30 - 14:00   Lunch and Posters  
14:00 - 14:45   Invited Talk III: Cyril Poupon  
14:45 - 15:30   Oral Session II: Registration  
Registration of Spherical Functions from High Angular Resolution Diffusion Imaging using the Heat Kernel Signature and Mobius Transformation.  
Liang Zhan et al. Laboratory of Neuro Imaging, Department of Neurology, UCLA School of Medicine, USA  
Detection of Unique Point Landmarks in HARDI Images of the Human Brain.  
Henrik Skibbe et al. University Hospital Freiburg, Germany  
15:30 - 16:00   Coffee Break  
16:00 - 17:30   Oral Session III: Diffusion Modelling and Experimental Design  
Amith Kamath et al. University of Minnesota, USA
Decomposition of Higher-Order Homogeneous Tensors and Applications to HARDI.
Evgeniya Balmashnova et al, Eindhoven University of Technology, Netherlands

Dynamic Diffusion Basis Functions for Axon Fiber Structure Estimation from DW-MRI.
Omar Ocegueda et al. Center for Research in Mathematics, Mexico

Alpay Özcan et al. Virginia Polytechnic Institute and State University, USA

17:30 - 18:00  Closing Remarks

Posters
Yuchen Xie

A Computational Framework for Experimental Design in Diffusion MRI.
Emmanuel Caruyer

Multi-task Bayesian Compressive Sensing of Diffusion Weighted MRI.
Julio Duarte-Carvajalino

Peter Neher

Constrained Diffusion Kurtosis Imaging Using Ternary Quartics and MLE.
Aurobrata Ghosh

Generalized Invariants of a 4th order tensor: Building blocks for new biomarkers in dMRI.
Aurobrata Ghosh

Anatomical Tissue Probability Priors for Tractography.
Gabriel Girard

White-matter structure assessment from reduced HARDI data using low-rank polynomial approximations.
Yaniv Gur

Statistical Analysis of Maximum Density Path Deformation Fields in White Matter Tracts.
Julio Villalon-Reina

A minimum cost approach to connectivity from orientation distribution functions via efficient multi-directional graph propagation.
Ipek Oguz

Demo NeurInfarct: a pipeline for the segmentation of infarct core and prediction infarct growth using acute-phase clinical diffusion-weighted MRI

Demo Camino: an open-source software toolkit for diffusion MRI processing

Demo DTI-TK: a spatial normalization and atlas construction toolkit optimized for examining white matter morphometry using DTI data

Demo MITK Diffusion: this application offers a selection of image analysis algorithms for the processing of diffusion-weighted MR images
October 5th

**CLIP** (9:00 – 17:30) – Novotel, Room Matisse

**Miccai 2012 workshop on CLinical Image-based Procedures: From Planning to Intervention**

[http://miccai-clip.org](http://miccai-clip.org)

Organizers: Klaus Drechsler, Marius Erdt, Marius George Linguraru, Cristina Oyarzun Laura, Karun Sharma, Raj Shekhar, Stefan Wesarg

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### 09:00 - 10:30 Session 1

#### Keynote 1
Bradford J. Wood

Computer-Based Quantitative Assessment of Skull Morphology for Craniosynostosis.
Carlos S. Mendoza, Nabile Safdar, Emmarie Myers, Tanakorn Kittisarapong, Gary Rogers, Marius George Linguraru

Automated segmentation and anatomical labeling of abdominal arteries based on multi-organ segmentation from contrast-enhanced CT data.
Yuki Suzuki, Toshiyuki Okada, Masatoshi Hori, Futoshi Yokota, Marius George Linguraru, Noriyuki Tomiyama, Yoshinobu Sato

Analysis of Structural MRI Data for the Localisation of Focal Cortical Dysplasia in Epilepsy.
Maddalena Strumia, Georgia Ramantani, Irina Mader, Juergen Hennig, Li Bai, Stathis Hadjidemetriou

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### 11:00 - 12:30 Session 2

#### Automatic Detection and Quantification of Mitral Regurgitation on TTE with Application to Assist Mitral Clip Planning and Evaluation.
Yang Wang, Dime Vitanovski, Bogdan Georgescu, Razvan Ionasec, Ingmar Voigt, Saurabh Datta, Gareth Funka-Lea, Dorin Comaniciu

Silvain Bériault, Simon Drouin, Abbas F. Sadikot, Yiming Xiao, D. Louis Collins, G. Bruce Pike

Meike Becker, Ralf Gutbell, Igor Stenin, Stefan Wesarg

Personalized surgical planning to support interventions and training of surgeons.
Cristina Suárez Mejías, Gorka Gómez, Purificación Gacto Sánchez, Tomás Gómez Cía, Carlos Parra Calderón

Intervention Planning of Hepatocellular Carcinoma Radio-Frequency Ablations.
Bernhard Kerbl, Philipp Voglreiter, Rostislav Khlebnikov, Dieter Schmalstieg, Philipp Stiegler, Rupert H. Portugaller, Daniel Seider, Michael Moche, Bernhard Kainz
12:30 - 14:00  Lunch

14:00 - 15:30  Session 3
Keynote 2.
Reto Bale
Method for 3D-2D Registration of Vascular Images: Application to 3D Contrast Agent Flow Visualization.
Uroš Mitrović, Žiga Špiclin, Boštjan Likar, Franjo Pernuš
Head Motion Compensation for Arterial Spin Labeling Using Optical Motion Tracking.
Martin Hoßbach, Johannes Gregori, Stefan Wesarg, Matthias Günther
Technical evaluation of a third generation optical pose tracker for motion analysis and image-guided surgery.
Juan Alberto Sánchez Margallo, Francisco Miguel Sánchez Margallo, José Blas Pagador Carrasco, Ignacio Oropesa, Marcos Lucas Hernández, Enrique J. Gómez, José Moreno del Pozo

16:00 - 17:30  Session 4
A Flexible Tool Localization by A 3D Ultrasound Calibration for Fetoscopic Tracheal Occlusion (FETO).
Rong Xu, Jun Ohyya, Bo Zhang, Yoshinobu Sato, Masakatsu G. Fujie
Intra-patient Non-rigid Registration of 3D Vascular Cerebral Images.
David Robben, Dirk Smeeets, Danny Ruijters, McElory Hoffmann, Laura Antanas, Frederik Maes, Paul Suetens
Comparison between rigid registration methods in four clinical scenarios.
Cristina Oyarzun Laura, Pablo Bueno Plaza, Klaus Drechsler
Ultrasound B-Mode Segmentation for Registration with CT in Percutaneous Hepatic Interventions.
Matthias Keil, Cristina Oyarzun Laura, Stefan Wesarg
Differences in Radiotherapy Delivery and Outcome Due to Contouring Variation.
Christian Hollensen, Gitte Persson, Liselotte Højgaard, Lena Specht, Rasmus Larsen

17:30  Best paper awards
October 5th

**DecisionForests** (9:00 – 12:30) - Acropolis, Room Gallieni 2

MICCAI 2012 tutorial on Decision Forests: Decision Forests for Classification, Regression, Density Estimation, Manifold Learning and Semi-Supervised Learning


Organizers: A. Criminisi, J. Shotton and E. Konukoglu

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<td>12:00 - 12:30</td>
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HIMA (9:00 – 18:00) – Acropolis, Foyer Hermes
MICCAI 2012 workshop on Histopathology Image Analysis:
Image Computing in Digital Pathology

http://go.warwick.ac.uk/hima2012
Organizers: Anant Madabhushi, Metin Gurcan, Nasir Rajpoot, Michael Feldman

09:00 - 10:30  Morning Session 1
09:00 - 09:50  Keynote Address: Computer assisted pathology - past experiences and future prospects.
               Prof Ewert Bengtsson (Uppsala University, Sweden)
09:50 - 10:10  Automated Segmentation of Atherosclerotic Histology Based on Pattern Classification.
               A. van der Engelen, W. Niessen, S. Klein, H. Groen, K. van Gaalen, H. Verhagen, J. Wentzel, A. van Lugt, M. de Bruijne
10:00 - 10:20  HyMaP: A Hybrid Magnitude-Phase Approach to Unsupervised Segmentation of Tumor Areas in Breast Cancer Histology Images.
               A.M. Khan, H. El-Daly, E. Simmons, N. Rajpoot

10:30 - 11:00  Coffee break

11:00 - 12:30  Morning Session 2
11:00 - 11:50  Keynote Address. Computerized Image Analysis in Digital Pathology with Histological and Cytological Virtual Slides.
               Prof Olivier Lezoray (University of Caen, France)
11:50 - 12:10  Approaches to automatic parameter fitting in a microscopy image segmentation pipeline: An exploratory parameter space analysis.
               C. Held, T. Nattkemper, J. Wenzel, R. Lang, R. Palmisano, T. Wittenberg
12:10 - 12:30  Quantifying local heterogeneity via morphologic scale: Distinguishing tumor from stroma.
               A. Janowczyk, S. Chandran, A. Madabhushi

12:30 - 14:00  Lunch & posters

14:00 - 15:30  Afternoon Session 1
14:00 - 14:50  Keynote Address: Simultaneous 100-parameter imaging and real time slicing across thousands of protein clusters in a single diagnostic tissue section using TISTM technology at 40nm super-resolution: the human toponome project.
               Prof Walter Schubert (Magdeburg University, Germany)
14:50 - 15:10  3D reconstruction of multiple stained histology images.
               Y. Song, D. Magee, A. Bulpitt, D. Treanor
15:10 - 15:30  A statistical framework for analyzing hypothesized interactions between cells imaged using multispectral microscopy and multiple immunohistochemical markers.
               C. Rose, K. Naidoo, V. Clay, K. Linton, J. Radford, R. Byers
15:30 - 16:00  Coffee break
16:00 - 17:30  Afternoon Sessions 2
16:00 - 16:20  TMARKER: A free software toolkit for histopathological cell counting and staining estimation
   P. Schüffler, T. Fuchs, C.S. Ong, P. Wild, N. Rupp, J. Buhmann
   Y. Zhou, D. Magee, D. Treanor, and A. Bulpitt
16:40 - 17:00  Neuromuscular fiber segmentation using particle filtering and discrete optimization.
   F. Varray, J. Kybic, O. Basset, C. Cachard
17:00 - 17:45  Panel Discussion: Challenges in wide-spread adoption of HIMA algorithms in the clinic: Conversations between the Pathologist and the Computer Scientist
17:45 - 18:00  Closing Remarks

Posters
Real-time whole slide mosaicing for non-automated microscopes in histopathology analysis.
   Alessandro Gherardi, Alessandro Bevilacqua
Registration of Histological Whole Slide Images Guided by Vessel Structures.
   Michael Schwier, Tobias Boehler, Horst Hahn, Uta Dahmen, Olaf Dirsch
Histological Stain Evaluation for Machine Learning.
   Applications Jimmy Azar, Christer Busch, Ingrid Carlbom
Automated Mitosis Detection Using Texture, SIFT Features and HMAX Biologically Inspired Approach.
   Humayun Irshad, Sepehr Jalali, Ludovic Roux, Daniel, LIM Joo Hwee
Immunohistochemical Analysis of Breast Tissue Microarray Images using Contextual Classifiers.
   Stephen McKenna, Telmo Amaral, Shazia Akbar, Alastair Thompson, Lee Jordan
Grading Dysplasia in Barrett’s Oesophagus Virtual Pathology Slides with Cluter Co-occurency Matrices.
   Afzan Adam, Andrew Bulpitt, Darren Treanor
Automated classification of immunostaining patterns in breast tissue from the Human Protein Atlas.
   Issac Niwas S, Andreas Kårsnäs, Virginie Uhlmann, Palanisamy P, Caroline Kampf, Martin Simonsson, Carolina, Robin Strand
Scalable System for Classification of White Blood Cells from Leishman Stained Blood Stain Images.
   Atin Mathur, Ardhendu Tripathi, Manohar Kuse
October 5th

**IGRT** (9:00 – 17:30) – Acropolis, Room Maïa
**MICCAI 2012 workshop on Image-Guidance and Multimodal Dose Planning in Radiation Therapy**

http://medical.rob.uni-luebeck.de/miccai2012rt/  
Organizers: Wolfgang Birkfellner, Jamie McClelland, Simon Rit, Alexander Schlaefer

**09:00 - 10:30** Image Registration papers

09:05 - 09:25 A Diffeomorphic MLR Framework for Surrogate-based Motion Estimation and Situation-adapted Dose Accumulation.  
Rene Werner, Matthias Wilms, Jan Ehrhardt, Alexander Schmidt-Richberg, Maximilian Blendowski and Heinz Handels

09:25 - 09:45 Lung tumour motion models in cone-beam CT.  
James Martin, Jamie McClelland, Christopher Thomas, Richard O’Brien, Shahreen Ahmed, Clare Hartill, Connie Yip, David Landau, Ivan Meir and David Hawkes

09:45 - 10:05 Improved accuracy in 2D/3D registration for image guided radiotherapy by using kV-MV image pairs.  
Hugo Furtado, Michael Figl, Markus Stock, Dietmar Georg and Wolfgang Birkfellner

10:05 - 10:17 Deformable Registrations for Head and Neck Cancer Adaptive Radiotherapy.  
Catarina Veiga, Jamie McClelland, Kate Ricketts, Derek D’Souza and Gary Royle

10:17 - 10:29 Numerical phantom generation to evaluate non-rigid CT/CBCT registration algorithms for prostate cancer radiotherapy.  
Mathieu Rubeaux, Guillaume Cazoulat, Aurélien Duménil, Caroline Lafond, Oscar Acosta, Renaud De Crevoisier, Antoine Simon and Pascal Haigron

**11:00 - 11:40** Keynote: Clinical indications and results for radiosurgery by Cyberknife.  
Pierre-Yves Bondiau

**11:40 - 12:30** Software Developments

11:40 - 12:00 Plastimatch 1.6 – Design, Architecture, and Future Directions.  
James Shackleford and Gregory Sharp

12:00 - 12:20 Application of the SlicerRT toolkit for image-guided radiation therapy research.  
Csaba Pinter, Andras Lasso, An Wang, David Jaffray and Gabor Fichtinger

12:20 - 12:32 User interface prototyping to understand radiology thinking.  
Edit Varga and Adinda Freudenthal

**14:00 - 15:30** Segmentation

14:00 - 14:20 Investigating mediastinal lymph node stations segmentation on thoracic CT following experts guidelines.  
David Sarrut, Line Claude, Simon Rit, Romulo Pinho, Graham Pitson and Rod Lynch
14:20 - 14:40 Glioblastoma growth modeling for radiotherapy target delineation.
Jan Unkelbach, Bjorn H Menze, Ali R Motamedi, Florian Dittmann, Ender Konukoglu, Nicholas Ayache and Helen A Shih

14:40 - 15:00 Segmentation and characterization of tumors in 18F-FDG PET-CT for outcome prediction in cervical cancer radio-chemotherapy.
Geoffrey Roman Jimenez, Julie Leseur, Anne Devillers, Juan David Ospina, Guillaume Louvel, Pascal Haigron, Antoine Simon, Renaud De Crevoisier and Oscar Acosta

15:00 - 15:12 Segmentation of pelvic structures from planning CT based on a statistical shape model with a multiscale edge detector and geometrical likelihood measures.
Fabio Martinez, Gaël Dréan, Antoine Simon, Pascal Haigron, Renaud de Crevoisier, Eduardo Romero and Oscar Acosta

15:12 - 15:24 VMAT inverse planning including DTI tractography fiber bundles as organs at risk: a feasibility study.
Marta Peroni, Paolo Patete, Francesco Ghielmetti, Daniela Casolino, Enrico Ongania, Davide Casolino, Laura Fariselli and Guido Baroni

16:00 - 17:30 Image-Guided Radiation Therapy

16:00 - 16:20 Computerized Determination of Robust Beam Directions Against Patient Setup Errors in Hadron Particle Therapy.
Hidetaka Arimura, Genyu Kakiuchi, Yoshiyuki Shioyama, Shin-Ichi Minohara, Asumi Mizoguchi, Katsumasa Nakamura, Yasuhiro Nakamura, Hiroshi Honda, Fukai Toyofuku, Masafumi Ohki and Hideki Hirata

16:20 - 16:40 Explaining relationships between local dose and rectal toxicity in prostate cancer radiotherapy with voxel-based population analysis.
Oscar Acosta, Gael Drean, Juan David Ospina, Antoine Simon, Pascal Haigron and Renaud de Crevoisier

16:40 - 17:00 Phantom validation of optical soft tissue navigation for Brachytherapy.
Christoph Otte, Gereon Hüttmann, György Kovacs and Alexander Schlaefer

17:00 - 17:12 Computer-assisted determination of the usable beam arrangement from similar treatment plans in stereotactic body radiotherapy.
Taiki Magome, Hidetaka Arimura, Yoshiyuki Shioyama, Asumi Mizoguchi, Chiaki Tokunaga, Katsumasa Nakamura, Yasuhiro Nakamura, Hiroshi Honda, Masafumi Ohki, Fukai Toyofuku and Hideki Hirata

17:15 - 17:30 Discussion and closing
October 5th

MCV (9:00 – 17:30) – Acropolis, Hermes Auditorium
MICCAI 2012 workshop on Medical Computer Vision

http://www.cir.meduniwien.ac.at/mcv2012/
Organizers: Bjoern Menze, Georg Langs, Albert Montillo, Zhuowen Tu, Antonio Criminisi

09:00 - 10:45  Morning oral session 1
Session 1: Registration
Real-time 2D / 3D Deformable Registration Using Metric Learning.
Chen-Rui Chou, Stephen Pizer

Herve Lombaert, Leo Grady, Xavier Pennec, Jean-Marc Peyrat, Nicholas Ayache, Farida Cheriet

Session 2: Segmentation
Tobias Gass, Gabor Szekely, Orcun Goksel

Carotid Artery Wall Segmentation by Coupled Surface Graph Cuts.
Andres Arias, Jens Petersen, Arna van Engelen, Hui Tang, Mariana Selwaness, Jacqueline Witteman, Aad van der Lugt, Wiro Niessen, Marleen de Bruijne

Graph Cut Segmentation using a Constrained Statistical Model with Non-Linear and Sparse Shape Optimization.
Tahir Majeed, Ketut Fundana, Silja Kiriyantwn, Joerg Beinemann, Philippe Cattin

10:30 - 11:00  Coffe break
11:00 - 12:30  Morning oral session 2
Invited talk : Nikos Paragios, Paris

Session 3: Detection, localization, tracking
Rene Donner, Georg Langs, Bjoern Menze, Horst Bischof

Oblique Random Forests for 3-D Vessel Detection Using Steerable Filters and Orthogonal Subspace Filtering.
Matthias Schneider, Sven Hirsch, Bruno Weber, Gabor Szekely, Bjoern Menze

Pipeline for Tracking Neural Progenitor Cells.
Jacob Vestergaard, Anders Dahl, Peter Holm, Rasmus Larsen

12:30 - 14:00  Lunch and Poster session

Automatic Extraction of the Curved Midsagittal Brain Surface on MR Images.
Hugo Kuijf, Max Viergever, Koen Vincken

Robust Anatomical Correspondence Detection by Graph Matching with Sparsity Constraint.
Yanrong Guo, Guorong Wu, Yakang Dai, Jianguo Jiang, Dinggang Shen

Shape Prior Model for Media-Adventitia Border Segmentation in IVUS Using Graph Cut.
Ehab Essa, Xianghua Xie, Igor Sazonov, Perumal Nithiarasu, Dave Smith
Igor Sazonov, Xianghua Xie, Perumal Nithiarasu

Atlas-Based Whole-Body PET-CT Segmentation using a Passive Contour Distance.
Fabian Gigengack, Lars Ruthotto, Xiaoyi Jiang, Jan Moderitzki, Martin Burger, Sven Hermann, Klaus Schäfers

Multiple Atlases-based Joint Labeling of Human Cortical Sulcal Curves.
Ilwoo Lyu, Gang Li, Minjeong Kim, Dinggang Shen

Novel Vector-Valued Approach to Automatic Brain Tissue Classification.
Nataliya Portman, Alan Evans

Kiryl Chykeyuk, Mohammad Yaqub, Alison Noble

Zehan Wang, Robin Wolz, Tong Tong, Daniel Rueckert

Identification of Malignant Breast Tumors Based on Acoustic Attenuation Mapping of Conventional Ultrasound Images.
Sivan Harary, Eugene Walach

What Genes tell about Iris Appearance.
Stine Harder, Susanne Christoffersen, Rasmus Paulsen, Anders Dahl, Niels Morling, Claus Borsting, Peter Johansen, Jeppe Andersen

Automatic Event Detection within Thrombus Formation based on Binary Integer Programming.
Loic Peter, Olivier Pauly, Sjoert Jansen, Peter Smethurst, Willem Ouwehand, Nassir Navab

14:00 - 15:30  Afternoon oral session 1

Session 4: 3D reconstruction

Robust Dense Endoscopic Stereo Reconstruction for Minimally Invasive Surgery.
Sylvain Bernhardt, Rafeef Abugharbieh

Model-based Human Teeth Shape Recovery from a Single Optical Image with Unknown Illumination.
Aly Farag, Shireen Elhabian, Aly Abdelrehim, Wael Aboelmaaty, Allan Farman, David Tasman

Session 6: Biophysical model personalization

Brain Tumor Cell Rate Estimation from Multi-modal MR Images Based on a Synthetic Tumor Growth Model.
Ezequiel Geremia, Bjoern Menze, Marcel Prastawa, Antonio Criminisi, Nicholas Ayache

Current-based 4D Shape Analysis for the Mechanical Personalization of Heart Models.
Loic Le Folgoc, Hervé Delingette, Antonio Criminisi, Nicholas Ayache

15:30 - 16:00  Coffe break

16:00 - 17:30  Afternoon oral session 2
Invited talk: Nassir Navab, Munich

Round Table Discussion with invited speakers and further guests:
How to turn research into clinical use? How to turn research into products?
What makes medical imaging data special compared to classical computer vision data and problems (CVPR, E/ICCV)?
How would we set up large data sets for designing and training efficient computer vision like algorithms? What are the problems?
How to make clinical data available to the broader research community? Is this a good idea after all?
**Molecular** (14:00 – 17:30) - Acropolis, Room Gallieni 2

**MICCAI 2012 tutorial on Modeling and Analysis of Molecular Imaging**

http://phd.gccis.rit.edu/feigao/MolecularImagingTutorial/

Organizers: Fei Gao, Kuangyu Shi

Keynote: Overview of Molecular Imaging  
Sir Michael Brady

Presentation 1: Biomathematical Modeling and Analysis in Molecular Imaging  
Dr. Roger Gunn

Presentation 2: Computational Image Analysis in Molecular Imaging  
Dr. Pengcheng Shi

Presentation 3: Introduction to Clinical and Biological Applications  
Dr. Fei Gao & Dr. Kuangyu Shi

Panel Discussion: Future of Modeling and Molecular Imaging within MICCAI  
(All presenters and major contributors)
MultiAtlas (9:00 – 12:30) - Acropolis, Room Gallieni 7
MICCAI 2012 workshop and challenge on Multi-Atlas Labeling
https://masi.vuse.vanderbilt.edu/workshop2012/index.php/Main_Page
Organizers: Bennett Landman, Simon Warfield

09:00 - 9:50 Technical Contributions (12 minutes presentation+3 min Q&A)
Joint generative model for segmentation and local atlas stratification,
Anemie Ribbens, Frederik Maes, Dirk Vandermeulen, and Paul Suetens
Segmentation via the Random Multi-Atlas Orbit Model,
Xiaoying Tang, Susumu Mori, Steven Yantis, Michael Miller
Multi Atlas Segmentation applied to in vivo mouse brain MRI,
Da Ma*, M. Jorge Cardoso, Marc Modat, Holly Holmes, Mark Lythgoe, Sébastien Ourselin

09:50 - 10:30 Top 3 Challenge Entries (3 papers - 7 mins + 3 min Q&A)
PICS_IL (1st place)
NonLocalSTAPLE (2nd Place)
MALP_EM (3rd Place)

10:30 - 11:00 Coffee Break
11:00 - 11:30 Poster Session
Challenge Entries (24 algorithms)
BIC-IPL. Multi-atlas labeling with population-specific template and non-local patch-based label fusion. Vladimir S. FONOVA, Pierrick Coupe, Simon F. Eskildsen, Jose Vicente Manjon Herrera, D. Louis Collins
CIS_JHU. Segmentation via the Random Multi-Atlas Orbit Model in Computational Anatomy.
Xiaoying Tang, Susumu Mori, and Michael I. Miller
CRL_MV_ANTTS. Evaluation of Some STAPLE Based Fusion Algorithms
CRL_MV_ANTTS+Baloo. Evaluation of Some STAPLE Based Fusion Algorithms
CRL_Probabilistic_STAPLE_ANTTS. Evaluation of Some STAPLE Based Fusion Algorithms
CRL_Probabilistic_STAPLE_ANTTS+Baloo. Evaluation of Some STAPLE Based Fusion Algorithms
CRL_Weighted_STAPLE_ANTTS. Evaluation of Some STAPLE Based Fusion Algorithms
CRL_Weighted_STAPLE_ANTTS+Baloo. Evaluation of Some STAPLE Based Fusion Algorithms
DISPATCH. Label propagation using group agreement – DISPATCH. Rolf A. Heckemann, Christian Ledig, Paul Aljabar, Katherine R. Gray, Daniel Rueckert, Joseph V. Hajnal, Alexander Hammers
MALP_EM. Segmentation of MRI brain scans using MALP-EM. Christian Ledig, Rolf A. Heckemann, Paul Aljabar, Robin Wolz, Joseph V. Hajnal, Alexander Hammers, Daniel Rueckert
MAPER. Multi-atlas propagation with enhanced registration – MAPER. Rolf A. Heckemann, Shiva Keihaninejad, Christian Ledig, Paul Aljabar, Daniel Rueckert, Joseph V. Hajnal, Alexander Hammers

NonLocalSTAPLE. Multi-Atlas Segmentation using Non-Local STAPLE. Andrew J. Asman, Bennett A. Landman


SBIA_SimMSVoting. Attribute Similarity and Mutual-Saliency Weighting for Registration and Label Fusion (algorithm: SBIA_SimMSVoting). Yangming Ou, Jimit Doshi, Guray Erus, Christos Davatzikos

SBIA_SimRank+NormMS. Attribute Similarity and Mutual-Saliency Weighting for Registration and Label Fusion (algorithm: SBIA_SimRank+NormMS). Yangming Ou, Jimit Doshi, Guray Erus, Christos Davatzikos

SBIA_SimRank+NormMS+WtROI. Attribute Similarity and Mutual-Saliency Weighting for Registration and Label Fusion (algorithm: SBIA_SimRank+NormMS+WtROI). Yangming Ou, Jimit Doshi, Guray Erus, Christos Davatzikos

SpatialSTAPLE. Multi-Atlas Segmentation using Spatial STAPLE. Andrew J. Asman, Bennett A. Landman

STEPS. Multi-Label STEPS validation on the Neuromorphometrics, inc. dataset. M. Jorge Cardoso, Marc Modat, Sebastien Ourselin


Technical Posters
Parametric Images: An Image Representation that Preserves Edge Strength in Registration and Atlasing. Blake Lucas, Yoshito Otake, Mehran Armand, Russell Taylor

Application Poster
Multi-Atlas Applications in Fatigue Pathophysiology. Mustafa M. Sami, Ko-hei Akazawa, Yilong Cui, Hisakazu Kikuchi, and Yosky Kataoka

11:30 - 11:40 2012 Challenge Debriefing
Bennett Landman

11:40 - 12:30 Challenge Discussion
NeoBrainS (14:00 – 17:30) – Acropolis, Room Gallieni 7
MICCAI 2012 challenge on Neonatal Brain Segmentation

http://neobrains12.isi.uu.nl/
Organizers: Ivana Išgum, Manon J.N.L. Benders, Max A. Viergever

14:00 - 14.15 Short introduction and distribution of the test data
14.15 - 16.15 On-site challenge: Participants segment the test data
16.15 - 17.00 Presentation of the segmentation results obtained prior to the challenge and discussion
17.00 - 17.30 Announcement of the on-site achieved results

List of accepted papers

An atlas-based method for neonatal MR brain tissue segmentation.
Siying Wang, Maria Kuklisova-Murgasova, and Julia A. Schnabel

Automatic tissue and structural segmentation of neonatal brain MRI using Expectation-Maximization.

Morphology-based segmentation of newborn brain MR images.
Laura Gui, Radoslaw Lisowski, Tamara Faundez, Petra S. Hüppi, Francois Lazeyras, and Michel Kocher

NeoBrainS12 Challenge: Adaptive neonatal MRI brain segmentation with myelinated white matter class and automated extraction of ventricles I-IV.
Andrew Melbourne, M. Jorge Cardoso, Giles S. Kendall, Nicola J. Robertson, Neil Marlow, and Sebastien Ourselin

Automatic Registration-Based Segmentation for Neonatal Brains Using ANTs and Atropos.
Jue Wu and Brian Avants

Vedran Srhoj-Egekher, Manon J.N.L. Benders, Karina J. Kersbergen, Max A Viergever, and Ivana Isgum
NIBAD (9:00 -18:00) – Acropolis, Room Gallieni 1

MICCAI 2012 workshop and challenge on Novel Neuroimaging Biomarkers for Alzheimer’s Disease

http://picsl.upenn.edu/nibad12
Organizers: Lei Wang, Paul Yushkevich, Sebastien Ourselin

09:00 - 09:15 INTRODUCTORY REMARKS.
Lei Wang, Paul Yushkevich and Sebastien Ourselin

09:15 - 10:30 ORAL SESSION I: ORIGINAL RESEARCH PAPERS

09:15 - 09:30 Arterial Spin Labeling at 3T in Semantic Dementia: Perfusion Abnormalities Detection and Comparison with FDG-PET.
Isabelle Corouge, Aurore Esquevin, Florence Lejeune, Jean-Christophe Ferré, Elise Bannier, Catherine Merck, Serge Belliard, Christian Barillot, and Jean-Yves Gauvrit

09:30 - 09:45 Improving Prediction of Alzheimer’s Disease Using Patterns of Cortical Thinning and Homogenizing Images According to Disease Stage.
Simon F. Eskildsen, Pierrick Coupé, Daniel García-Lorenzo, Vladimir Fonov, Jens C. Pruessner, D. Louis Collins, and the ADNI

09:45 - 10:00 A Time-Change Method for Computing an Alzheimer’s Disease Progression Score.
Bruno Jedynak, Bo Liu, Andrew Lang, Yulia Gel and Jerry Prince for the ADNI

10:00 - 10:15 Hippocampus as a Predictor of Cognitive Performance: Comparative Evaluation of Analytical Methods and Morphometric Measures.
Taiyong Li, Jing Wan, Zhilin Zhang, Jingwen Yan, Sungeun Kim, Shannon L. Risacher, Shiaofen Fang, M. Faisal Beg, Lei Wang, Andrew J. Saykin, Li Shen, for the ADNI

10:15 - 10:30 Predicting Future Brain Atrophy from DTI-based Maximum Density Path Analysis in Mild Cognitive Impairment and Alzheimer’s Disease.

10:30 - 11:00 COFFEE BREAK

11:00 - 12:30 ORAL SESSION II: ORIGINAL RESEARCH PAPERS

11:00 - 11:15 SNIPE: A New Method to Identify Imaging Biomarker for Early Detection of Alzheimer’s Disease.
Pierrick Coupé, Simon F. Eskildsen, José Manjón, Vladimir Fonov, Jens C. Pruessner, Michèle Allard, D. Louis Collins, and the ADNI

11:15 - 11:30 Maximizing Power to Track Alzheimer’s Disease Progression by LDA-Based Weighting of Longitudinal Ventricular Surface Features.
Boris A. Gutman, Priya Rajagopalan, Arthur W. Toga and Paul M. Thompson

11:30 - 11:45 PBSI: A Symmetric Probabilistic Extension of the Boundary Shift Integral
Christian Ledig, Robin Wolz, Paul Aljabar, Jyrki Lötjönen and Daniel Rueckert

11:45 - 12:00 Disentangling the Normal Aging from the Pathological Alzheimer’s Disease Progression on Cross-sectional Structural MR Images.
Marco Lorenzi, Xavier Pennec, Nicholas Ayache and Giovanni Frisoni for the ADNI
12:00 - 12:15  Integrated Cortical Structural Marker for Alzheimer's Disease.
Jing Ming, M. Faisal Beg and Lei Wang

Juan David Ospina, Pascal Benquet, Juan Carlos Correa, Oscar Acosta, and the ADNI

12:30 - 14:00  LUNCH

14:00 - 15:15 ORAL SESSION III: Atrophy Challenge
14:00 - 14:15  Introduction to the Atrophy Challenge.
Sebastien Ourselin

14:15 - 14:30  Longitudinal FreeSurfer for Reliable Imaging Biomarkers.
Martin Reuter, H. Diana Rosas, and Bruce Fischl

14:30 - 14:45  Atrophy Measurement Based on Segmentation Propagation and the Boundary Shift Integral Technique.
Marc Modat, Kelvin K. Leung, M. Jorge Cardoso, Nick C. Fox

14:45 - 15:00  Unbiased Longitudinal Registration Using ITK4/ANTS.
Hongzhi Wang, Sandhitsu R. Das, Paul A. Yushkevich, and Brian B. Avants

15:00 - 15:15  Probabilistic Flux Analysis of Cerebral Longitudinal Atrophy.
Marco Lorenzi, Giovanni B. Frisoni, Nicholas Ayache, and Xavier Pennec

15:15 - 17:15  POSTER SESSION (with Coffee at 15:30)
Posters: Original Research Papers

Manifold Driven MR-less PiB SUVR Normalisation.

Classification of Early-Stage Presenile Dementia Based on Arterial Spin Labeling and Structural MRI.
Esther E. Bron, Rebecca M.E. Steketee, Gavin C. Houston, John C. van Swieten, Alexander Hammers, Wiro J. Niessen, Marion Smits, and Stefan Klein

MRI Scan Acceleration and Power to Track Brain Change.
Christopher R. K. Ching, Xue Hua, Derrek P. Hobar, Chadwick P. Ward, Jeffrey L. Gunter, Matt A. Bernstein, Clifford R. Jack Jr., Michael W. Weiner, Paul M. Thompson, and the ADNI

Analyzing the Structural k-core of Brain Connectivity Networks in Normal Aging and Alzheimer's Disease.
Madalaine Daianu, Neda Jahanshad, Talia Nir, Emily Dennis, Arthur W. Toga, Clifford R. Jack Jr, Michael W. Weiner, Paul M. Thompson, and the ADNI

Increased Functional Connectivity within Medial Temporal Lobe Correlates with Greater Longitudinal Atrophy Rates in Mild Cognitive Impairment.
Sandhitsu Das, John Pluta, Lauren Mancuso, Dasha Kliot, Sylvia Orozco, Paul Yushkevich and David Wolk

High-dimensional Morphometry Longitudinal Analysis in Alzheimer's Disease.
Simon Duchesne, Fernando Valdivia, Abderazzak Mouiha, and Nicolas Robitaille for the ADNI
ADNI

Boosting Power to Associate Brain Connectivity Measures and Dementia Severity using Seemingly Unrelated Regressions (SUR).

Amygdala Atrophy in MCI/Alzheimer’s Disease in the BIOCARD Cohort Based on Diffeomorphic Morphometry.
Michael I. Miller, Laurent Younes, Tilak Ratnanather, Timothy Brown, Tommy Reigel, Huong Trinh, Xiaoying Tang, Peter Barker, Susumu Mori, and Marilyn Albert

Evaluation of Bias in Brain Atrophy Estimation.
Akshay Pai, Sune Darkner, Lauge Sørensen, Lene Lillemark, Peter Mysling, Jon Sporring, Erik Dam, and Mads Nielsen

Identification of Novel Cortical Surface Biomarkers for Predicting Cognitive Outcomes Based on Group-Level L2;1 Norm.
Jingwen Yan, Taiyong Li, Hua Wang, Heng Huang, Jing Wan, Kwangsik Nho, Sungeun Kim, Shannon L. Risacher, Andrew J. Saykin, and Li Shen, for the Alzheimer’s Disease Neuroimaging Initiative

Posters: Atrophy Challenge

Enforcing Longitudinal Consistency in Longitudinal Analysis Using Multi-Atlas Segmentation.
P. Bourgeat, V. Dore, K. K. Shen, P. Raniga, O. Salvado, J. Fripp, for the ADNI

Robust Individual Template Pipeline Processing for Longitudinal MR Images.
N. Guizard, V. S. Fonov, B. Aubert-Broche, D. Garcia-Lorenzo., P. Coupé, S. F. Eskilden, D. L. Collins

Comparison of Mask-Based Differences, Boundary Shift Integral and Symmetric Normalization Jacobian Integration.
Jeffrey L Gunter, Matthew L Senjem, Prashanthi Vemuri, Clifford R. Jack, Jr.

Atrophy Measurement Biomarkers Using Structural MRI for Alzheimer’s Disease.
L. O. Iheme, O. Baskaya, A. Sennaz, M. S. Tepe, M. Kandemir, T. Kahraman, Z. B.Yalciner, G. Unal, D. Unay

17:15 - 17:45  ATROPHY CHALLENGE: STATISTICAL ANALYSIS RESULTS.
Jonathan Schott

17:45 - 18:00  CLOSING REMARKS.
Lei Wang, Paul Yushkevich and Sebastien Ourselin
October 5th

SACAI (9:00 – 17:00) – Acropolis, Room Gallieni 6

MICCAI 2012 workshop on Systems and Architectures for Computer Assisted Interventions


Organizers: Rajesh Kumar, Andinet Enquobahrie, Oliver Burgert, Stefan Bohn, Kiyo Chinzei, Nobuhiko Hata, Peter Kazanzides

09:00 - 09:15 Welcome remarks
   R Kumar

09:15 - 09:45 3D Slicer demonstration
   N Hata

09:45 - 10:45 Platform Presentations: Session 1
   Chair: N Hata
   Cardiac Interventional Guidance using Multimodal Data Processing and Visualisation: medInria as an Interoperability Platform.
   Vichot F., Cochet H., Bleuzé B., Toussaint N., Jaïs P., Sermesant M.
   Open-source training platform for ultrasound-guided needle insertions.
   Ungi T, Lasso A, Fichtinger G.
   Manage A Treatment Planning System for the Small Animal Radiation Research Platform (SARRP) based on 3D Slicer.
   Cho N., Kazanzides P.

10:45 - 11:10 Break

11:10 - 11:30 SAW/cisst Demonstration
   P Kazanzides

11:30 - 12:30 Platform Presentations: Session 2
   Chair: P Kazanzides
   On the Generation of Ground Truth Data for Depth Reconstruction.
   Staub C., Haider A., Grimm M., Knoll A.
   An integration architecture with centralized control for medical devices in the digital operating room.
   Bohn S, Franke S, Burgert O, Neumuth T
   Kumar R.

12:30 - 13:30 Lunch break

13:30 - 14:30 Industry/Academia Collaboration Panel
   Facilitator: S Bohn

14:30 - 15:30 Platform Presentations: Session 3
   Chair: A Enquobahrie
   Implementation of the PLUS open-source toolkit for translational research of ultrasound-guided intervention systems.
   Lasso A., Heffter T, Pinter C., Ungi T, Fichtinger G.
MUSiiC ToolKit: Bi-directional Real-time Software Framework for Advanced Ultrasound Research.
Kang H-J, Cheng A, Boctor E.
Robot assisted prostate surgery using augmented reality with deformable model.

15:30 - 16:00  Break
16:00 - 16:30  ITK/IGSTK Demonstration: A Enquobahrie
16:30 - 17:00  Conclusion/ Future of SACAI
Facilitators: Kazanzides/Enquobahrie
STACOM (8:50 – 18:00) – Acropolis, Room Gallieni 4
MICCAI 2012 workshop on Statistical Atlases and Computational Models of the Heart

http://www.physense.org/stacom2012
Organizers: Oscar Camara, Kawal Rhode, Tommaso Mansi, Mihaela Pop, Maxime Sermesant, Alistair Young

08:50 - 09:00 Welcome and opening remarks
09:00 - 09:30 KEYNOTE SPEAKER: DR. STEVE NIEDERER
09:30 - 10:30 CFD Challenge (aim, data and selected talks)
  Motivation and short challenge presentation
  Study on hemodynamics in patient-specific thoracic aortic coarctation model.
  Wenyu Fu, Aike Qiao
  Quantitative Hemodynamic Evaluation in Children with Coarctation of Aorta: Phase Contrast Cardiovascular MRI versus Computational Fluid Dynamics.
  Prahlad G Menon, Kerem Pekkan, Shobhit Madan
  A lattice Boltzmann Simulation of Hemodynamics in a Patient-Specific Aortic Coarctation Model.
  Amanda Peters Randles, Moritz Bächer, Hanspeter Pfister, Efthimios Kaxiras
  An 1D lumped-parameter/3D CFD approach for pressure drop in the Aortic Coarctation.
  Eduardo Soudah, Maurizio Bordone, Pooyan Davdan, Riccardo Rossi
  Lattice Boltzmann Method Meets Aortic Coarctation Model.
  Thomas Henn, Mathias J. Krause, Sebastian Ritterbusch, Vincent Heuveline
  CFD Challenge: Hemodynamic Simulation of a Patient-Specific Aortic Coarctation Model with Adjoint-Based Calibrated Windkessel Elements.
  Mahmoud Ismail, Michael Gee, Wolfgang A. Wall
  Wrap-up of the CFD challenge

10:30 - 11:00 Coffee break + Posters
11:00 - 12:00 Motion Tracking Challenge (aim, data and selected talks)
  Motivation and short challenge presentation
  Synthetic and Phantom Setups for the Second cardiac Motion Analysis Challenge (cMAC2).
  Mathieu De Craene, Pascal Allain, Hang Gao, Adityo Prakosa, Stephanie Marchesseau, Loïc Hilbert, Oudom Somphone, Hervé Delingette, Sherif Makram Ebeid, Nicolas Villain, Jan D’hooge, Maxime Sermesant, Eric Saloux
  Monogenic phase based optical flow computation for myocardial motion analysis in 3D echocardiography.
  Martino Alessandrini, Hervé Liebgott, Daniel Barbosa, Olivier Bernard
Three-dimensional cardiac motion estimation based on non-rigid image registration using a novel transformation model adapted to the heart.
Brecht Heyde, Daniel Barbosa, Piet Claus, Frederik Maes, Jan D’hooge

Temporal diffeomorphic Free Form Deformation to quantify changes induced by left and right bundle branch block and pacing.
Gemma Piella, Antonio R. Porras, Mathieu De Craene, Nicolas Duchateau, Alejandro F. Frangi

Wrap-up of the Motion Tracking Challenge

12:00 - 12:30 Regular papers - part 1: Modelling (selected talks, 10 minutes)
Automated Personalised Human Left Ventricular FE Models To Investigate Heart Failure Mechanics.
Vicky Wang, Corné Hoogendoorn, Alejandro Frangi, Alistair Young, Peter Hunter, Martyn Nash

In vivo contact EP data and ex vivo MR-based computer models: model-dependent errors.
Mihaela Pop, Maxime Sermesant, Roey Flor, Charles Pierre, Tommaso Mansi, Samuel Oduneye, Jen Barry, Yves Coudiere, Eugene Crystal, Nicholas Ayache, Graham Wright

Towards Real-Time Computation of Cardiac Electrophysiology for Training Simulator.
Hugo Talbot, Christian Duriez, Hadrien Courtecuisse, Jatin Relan, Maxime Sermesant, Stephane Cotin, Hervé Delingette

12:30 - 14:00 Lunch & Posters

14:00 - 14:30 KEYNOTE SPEAKER: DR. XAVIER PENNEC
14:30 - 15:30 DE-MRI Segmentation Challenge (aim, data and selected talks)
Introduction and Challenge Data.
Piet Claus (KU Leuven, Belgium)

Healthy and scar myocardial tissue classification in DE-MRI.
Xènia Albà, Rosa M. Figueras i Ventura, Karim Lekadir, Alejandro F. Frangi

Hierarchical Conditional Random Fields for Myocardium Infarction Detection.
Zahra Karimaghaloo, Hassan Rivaz, Tal Arbel

Mixture-model-based segmentation of myocardial delayed enhancement in MR data.
Anja Hennemuth, Ola Friman, Markus Huellebrand, Heinz-Otto Peitgen

Evaluation and Summary.
Rashed Karim (King’s College London, UK)

15:30 - 16:00 Coffee break + Posters

16:00 - 16:30 Landmark Challenge (aim, data and selected talks)
Introduction and Challenge Data
Xiaoguang Lu, Marie-Pierre Jolly
Landmark Detection in Cardiac MRI Using Learned Local Image Statistics.  
Dwarikanath Mahapatra

Wrap-up of the Landmark Detection Challenge

16:30 - 17:30 Regular papers - part II: Imaging (selected talks, 10 minutes each)

Real-time Catheter Extraction from 2D X-ray Fluoroscopic and 3D Echocardiographic Images for Cardiac Interventions.  
Xianliang Wu, James Housden, Yingliang Ma, Daniel Rueckert, Kawal Rhode

Generalized Step Criterion Edge Detectors for Kalman Filter Based Left Ventricle Tracking in 3D+T Echocardiography.  
Engin Dikici, Fredrik Orderud

A pre-clinical framework to characterize peri-infarct remodelling using in vivo T1 maps and CARTO data.  
Mihaela Pop, Samuel Oduneye, Nilesh Ghugre, Elnaz Shokrollahi, Jennifer Barry, Yuesong Yang, Sudip Ghate, Roey Flor, Ilan Lashevsky, Eugene Crystal, Graham Wright

Feasibility Study of Looped-Catheter-Based 2D-3D Image Registration of CT and X-rays for Cardiac Catheterization Procedures in a Phantom Experiment.  
Michael V Truong, Graeme Penney, Kawal Rhode

Quantification of Transvalvular Flow through Composite Gaussian Surfaces from Temporally Interleaved Multi-view 3D Colour Doppler Images.  
Alberto Gomez, Daniel Giese, Kuberan Pushparajah, John Simpson, Tobias Schaeffter, Graeme Penney

A near-incompressible poly-affine motion model for cardiac function analysis.  
Kristin McLeod, Christof Seiler, Maxime Sermesant, Xavier Pennec

17:30 - 18:00 Prizes & Announcements & Future events

18:00 Closing

List of Accepted Posters

Motion Tracking Challenge

Motion Estimation in 3D Echocardiography using Smooth Field Registration.  
Oudom Somphone, Cécile Dufour, Loïc Hilpert, Sherif Makram Ebeid, Nicolas Villain, Mathieu De Craene, Pascal Allain, Eric Saloux

Quadrature Filter Based Analysis of Myocardial Deformation Based on 3D Ultrasound.  
Lennart Tautz, Anja Hennemuth, Heinz-Otto Peitgen

Evaluation of iLogDemons Algorithm for Cardiac Motion Tracking in Synthetic Ultrasound Sequence.  
Adityo Prakosa, Kristin McLeod, Maxime Sermesant, Xavier Pennec
DE-MRI Challenge
Infarct Segmentation of the Left ventricle using Graph-cuts.
Rashed Karim, Zhong Chen, Samantha Obom, Yingliang Ma, Prince Acheampong, Jaswinder Gill, C.Aldo Rinaldi, Mark O’Neill, Reza Razavi, Tobias Schaeffter, Kawal Rhode

Supervised Learning Modelization and Segmentation of Cardiac Scar in Delayed Enhanced MRI.
Laura Lara, Sergio Vera, Frederic Perez, Nico Lanconelli, Rita Morisi, Bruno Donini, Dario Turco, Cristina Corsi, Claudio Lambert, Giovana Gavidia, Maurizio Bordone, Eduardo Soudah, Nick Curzen, James Rosengarten, John Morgan, Javier Herrero, Miguel Ángel González Ballester

Regular Papers
An Atlas for Cardiac MRI Regional Wall Motion and Infarct Scoring.
Pau Medrano-Gracia, Avan Suinesiaputra, Brett Cowan, David Bluemke, Alejandro Frangi, Daniel Lee, João Lima, Alistair Young

A fast and noise-robust method for computation of intravascular pressure difference maps from 4D PC-MRI data.
Sebastian Meier, Anja Hennemuth, Johann Drexel, Jelena Bock, Bernd Jung, Tobias Preusser

Measurement of Myocardial Structure: 3D Structure Tensor Analysis of High Resolution MRI Quantitatively Compared to DT-MRI.
Stephen Gilbert, Mark Trew, Bruce Smail, Aleksandra Radjenovic, Olivier Bernus

Robust and accurate diaphragm border detection in cardiac X-Ray angiographies.
Simeon Petkov, Adriana Romero, Xavier Carrillo Suarez, Petia Radeva, Carlo Gatta

Modeling of the optical behavior of myocardial fibers in polarized light imaging.
Paul Audain Desrosiers, Gabrielle Michalowicz, Pierre-Simon Jouk, Yves Usson, Yuemin Zhu

What a difference in biomechanics cardiac fiber makes.
Debora Gil, Agnés Borràs, Ruth Aris, Mariano Vázquez, Francesc Carreras, Pierre Lafortune, Guillaume Houzeaux, Jazmin Aguado, Manel Ballester, Chi Hion Li

Multi-resolution DT-MRI cardiac tractography.
Ferran Poveda, Enric Marti, Debora Gil

From Image to Personalized Cardiac Simulation: Encoding Anatomical Structures into a Model-Based Segmentation Framework.
Hannes Nickisch, Hans Barschdorf, Frank M. Weber, Martin W. Krueger, Olaf Dössel, Jürgen Weese

Exercise induced inter-individual variation of right ventricular pressures: simulations using a modular model of the cardiovascular system.
Catalina Tobon-Gomez, Georgina Palau, Marta Sitges, Bart H Bijnens

Improving clinical translation of cardiovascular circulatory models through an intuitive Graphical User Interface to CircAdapt, presenting simulation results as clinical images and signals.
Georgina Palau, Catalina Tobon-Gomez, Vedrana Balicevic, Constantine Butakoff, Sven Loncaric, Marta Sitges, Bart H. Bijnens

Integrating fiber orientation constraint into a spatio-temporal FEM model for heart borders and motion tracking in dynamic MRI.
Stoica Razvan, Pousin Jerome, Casta Christopher, Croisille Pierre, Zhu Yue-Min, Clarysse Patrick

Understanding hemodynamics and its determinant factors in type B aortic dissections using an equivalent lumped model.
Paula Rudenick, Bart H. Bijnens, Constantine Butakoff, David García-Dorado, Arturo Evangelista
October 5th

**STMI** (9:00 – 17:30) – Acropolis, Room Gallieni 5

**MICCAI 2012 workshop on Sparsity Techniques in Medical Imaging**

http://stmi12.rutgers.edu/

Organizers: Dimitris Metaxas, Leon Axel, Junzhou Huang, Shaoting Zhang

09:00 - 09:30  **Keynote Lecture**

09:30 - 10:15  **Oral Session 1**

Michal Romaniuk, Anil Rao, Robin Wolz, Joseph Hajnal, Daniel Rueckert

Vimal Singh, Ahmed Tewfik

The Benefit of Tree Sparsity in Accelerated MRI.
Chen Chen, Junzhou Huang

10:15 - 10:30  **Spotlight 1**

MRI reconstruction from partial k-space data by iterative stationary wavelet transform thresholding.
Mohammad Kayvanrad, Charles McKenzie, Terry Peters

Accelerated Parallel Magnetic Resonance Imaging with Joint Gradient and Wavelet Sparsity.
Chen Chen, Junzhou Huang, Leon Axel

AEDL Algorithm for Change Detection in Medical Images
Varvara Nika, Paul Babyn, Hongmei Zhu

10:30 - 11:00  **Coffee break**

11:00 - 11:45  **Oral Session 2**

Sparse Deformable Models with Applications to Mouse LV Motion Analysis using Tagged MRI.
Yang Yu, Shaoting Zhang, Junzhou Huang, Dimitris Metaxas, Rutgers, Leon Axel

Robust Patch-Based Multi-Atlas Labeling by Joint Sparsity Regularization.
Guorong Wu, Qian Wang, Daoqiang Zhang, Dinggang Shen

Dictionary Learning on Riemannian Manifolds.
Yuchen Xie, Baba C. Vemuri, Jeffrey Ho

11:45 - 12:00  **Spotlight 2**

Segmentation Using Sparse Shape Model and Minimally Supervised Method in Liver Surgery Planning and Guiding System.
Guotai Wang, Feng Li, Lixu Gu
Tracking the Left Ventricle Through Collaborative Trackers and Sparse Shape Model.
Yan Zhou

Segmentation of Brain MR Images via Sparse Patch Representation.
Tong Tong, Robin Wolz, Joseph Hajnal, Daniel Rueckert

12:00 - 14:00 Lunch & posters
14:00 - 14:30 Keynote Lecture
14:30 - 15:15 Oral Session 3
Breast Density Scoring with Multiscale Denoising Autoencoders.
Kersten Petersen, Konstantin Chernoff, Mads Nielsen, Andrew Ng
Motion and Contrast Enhancement Separation Model Reconstruction from Partial Measurements in Dynamic MRI.
Benjamin Tremoulheac
Compressive Matched Filter for Cerebral Blood Flow Quantification with ASL: sampling diversity or repetition?
Lei Yu, Pierre Maurel, Christian Barillot, Remi Gribonval

15:15 - 15:30 Spotlight 3
Automatic Rapid Segmentation of Human Lung from 2D Chest X-Ray Images.
Zhennan Yan, Jing Zhang, Shaoting Zhang, Dimitris Metaxas
Diagnosis and prognosis of osteoarthritis by texture analysis using sparse linear models.
Joselene Marques, Line Clemmensen, Erik Dam
Content Based Medical Image Retrieval using Compressed Features.
Xiang Yu, Shaoting Zhang, Bo Liu and Dimitris N. Metaxas
Lung Image Classification using Locality-Constrained Linear Coding.
Meng Yi, Tatyana Nuzhnaya, Vasileios Megalooikonomou, Xinggang Wang, Longin Jan Latecki, Mark Kohn, Robert Steiner

15:30 - 16:00 Coffee break
16:00 - 17:30 Posters