MICCAI 2016 Athens GREECE

19TH INTERNATIONAL CONFERENCE ON
MEDICAL IMAGE COMPUTING &
COMPUTER ASSISTED INTERVENTION

October 17–21 2016

INTERCONTINENTAL ATHENAEUM
ATHENS / GREECE

www.miccai2016.org

PROGRAM 2016

MICCAI

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WELCOME

Welcome to MICCAI 2016 in Athens!

It is a privilege and honour for the organisation team to be your host this year at the Intercontinental Athenaeum Hotel in Athens. MICCAI is an outstanding platform to promote, foster and disseminate our research in a very collegial and friendly atmosphere, which we all enjoy so much. We very much hope that we will provide you yet another memorable MICCAI this year as well.

MICCAI 2016 received 756 submissions, from which we selected 228 papers for publication. We are very grateful to our Program Committee members and our reviewers who are at the core of the stringent selection process. We appreciate the amount of work everyone is putting into this review process and are very excited by our scientific program and we do hope that you will be too!

We are hugely grateful of the financial support we received from our sponsors. It made a critical difference to the overall quality of the meeting, especially this year where we had to make some drastic changes of destination a few months before the conference.

We would also like to thank the MICCAI Society for its support and guidance along the years. Our Society is playing a key role towards the growth of our research field and we all need to be supportive of its activities.

We are delighted to host you in this great historical city. Our journey to Athens has been somehow quite challenging although could have been far more complex without the continuous support of Dekon, who did an amazing job to relocate the conference from Istanbul to Athens in a very smooth and professional manner.

I wish you all a memorable scientific and social event.

Sebastien Ourselin
General Chair, MICCAI 2016

Dear MICCAI participant,

I wish you a very warm welcome to MICCAI 2016, in the beautiful city of Athens. To me, the MICCAI conference is always one of the highlights of the year. With its focused workshops and tutorials and excellent main meeting, it is the place to learn about the latest developments in our field, to discuss with colleagues, and to make and meet friends.

Perhaps we do not realize this everyday, but writing this word of welcome I do: we, as a MICCAI community, have the privilege to be working in a unique field of research. Conducting research in medical image computing and computer assisted interventions exposes us to the beauty of life and the complexity of disease. It challenges us to address fundamental problems with new theory and advanced technology, ranging from machine learning to medical robotics. It enables us to make impact, as this is a field with tremendous socioeconomic relevance; developments in our field affect our personal health and quality of life, and help us to address community and global health issues. I am really proud of the achievements that we as a community make in this field, and the particular important role the MICCAI conference and MICCAI society plays herein.

Of course, a meeting like MICCAI is impossible without the hard work of many individuals, who, mostly fully voluntarily, devote many hours to its success. It is the authors who bring the excellent science, it is the hard work of reviewers that enables the organizers to shape the programme and provide authors feedback, and it is the hard work of many members of the MICCAI Society in the background to support the local organization. I thank you all for your great efforts. Lastly and most importantly, I would like to take this opportunity to thank and compliment the MICCAI 2016 organization committee for their excellent work and dedication, especially in view of the challenging circumstance of having to relocate the meeting, to make this conference a great success. Thanks to you, for a full week, we can all enjoy, inspire and be inspired. I look forward to it!

Wiro Niessen
MICCAI Society President

PROGRAM OVERVIEW

Monday, October 17

09:30 - 18:00	Satellite Events
18:30 - 21:00	MICCAI Student Academia and Industry Event

Tuesday, October 18

07:00	MICCAI Jogging
09:00 - 09:30	Welcome
09:30 - 10:30	Oral Session 1
10:30 - 11:00	**Coffee Break**
10:30 - 12:00	Poster Session 1
12:00 - 13:00	Keynote Lecture 1: Lecture: Prof. Clare Tempany
13:00 - 14:00	**Lunch**
14:00 - 16:00	Oral Session 2
16:00 - 16:30	**Coffee Break**
16:00 - 17:30	Poster Session 2
17:30 - 19:00	**Welcome Reception**

Wednesday, October 19

07:00	MICCAI Jogging
09:00 - 10:30	Oral Session 3
10:30 - 11:00	**Coffee Break**
10:30 - 12:00	Poster Session 3
12:00 - 13:00	Keynote Lecture 2: Lecture: Prof. Yoav Medan
13:00 - 14:00	**Lunch**
14:00 - 14:20	MICCAI Society Business Update Meeting
14:20 - 16:20	Oral Session 4
16:20 - 16:50	**Coffee Break**
16:20 - 17:50	Poster Session 4
18:15	Departure for the Gala Dinner

Thursday, October 20

07:00	MICCAI Jogging
09:00 - 10:30	Oral Session 5
10:30 - 11:00	**Coffee Break**
10:30 - 12:00	Poster Session 5
12:00 - 13:00	Keynote Lecture 3: Lecture: Prof. Kamil Ugurbil
13:00 - 14:00	**Lunch**
14:00 - 15:30	Oral Session 6
15:30 - 16:00	**Coffee Break**
16:00 - 17:00	Awards and Closing Ceremony
18:00 - 19:30	MICCAI Soccer and Basketball

Friday, October 21

09:30 - 18:00	Satellite Events

GENERAL INFORMATION

Registration Desk

Registration desk will be located at -1 Banquet Lobby of the Intercontinental Athenaeum Hotel.

The working hours of the registration desk will be as below;

17 October 2016, Monday	07:30 - 19:30
18 October 2016, Tuesday	07:30 - 19:00
19 October 2016, Wednesday	08:00 - 18:30
20 October 2016, Thursday	08:00 - 18:30
21 October 2016, Friday	08:00 - 18:30

Exhibition - Opening Hours

Intercontinental Athenaeum Hotel -2 Banquet Lobby will be the exhibition area.

18 October 2016, Tuesday	07:30 - 19:00
19 October 2016, Wednesday	08:00 - 18:30
20 October 2016, Thursday	08:00 - 16:00

Lunches and Coffee Breaks

Lunches and coffee breaks are included in the registration and will be served on site at the foyers.

Name Badges

Please wear your name badges at all times. Only MICCAI 2016 participants wearing official name badges will be allowed to access the conference site and attend the scientific and social programs.

Internet Access

Wifi access is available through the conference halls. The wifi credentials are as below;

Wireless Name : MICCAI2016
Password : 20miccai16

Poster Presentations

Aphrodite 1-2-3 Hall which is located on the Lobby level of the hotel will be used as poster area. All accepted papers are to be presented as posters at the conference. The posters will stay up throughout the three days of the main conference. During the assigned poster sessions, one of the authors must present the paper at the poster. The posters may be mounted starting at 08:00 on Tuesday, 18 October 2016. The posters must be taken down on Thursday, 20 October 2016 between 16:30 - 18:00. Posters left behind by presenters will be discarded.

GENERAL INFORMATION

Poster Identifiers

Each poster is assigned to a unique identifier. The letter and the number indicates the session number of the poster and the second number indicates the identifier of your poster.

For Poster Session 1 the unique identifier start with PS1
For Poster Session 2 the unique identifier start with PS2
For Poster Session 3 the unique identifier start with PS3
For Poster Session 4 the unique identifier start with PS4
For Poster Session 5 the unique identifier start with PS5

Please find your poster number from the detailed poster session program

Long Oral Presentations

Each oral presentation is allocated a 15 minute slot. Actual talks must not exceed 12 minutes leaving 2-3 minutes for questions. Timing will be strictly enforced. Please make sure that you have rehearsed the timing of your talk beforehand. Each of the oral presentations will also have an associated poster presentation, therefore, additional details can be given at that time. Presenters need to upload their presentation at the speaker preview room before their sessions. It is not permitted to use your own laptop during the presentation.

Satellite Events

All satellite events will be held at the Intercontinental Athenaeum Hotel.

Tourist Information

Maps, restaurant lists and information about attractions are available at the concierge desk of hotel.

Smoking Policy

Smoking is prohibited in indoor public places. It is strongly recommended to respect smoking/ non-smoking signs.

Money and Currency

The Euro is the official currency of Greece. Bank notes come in denominations of 5,10,20,50,100,200,500 Euro. Coins come in amount of 1,2,5,10,20,50 cents and 1 Euro and 2 Euro coins.ATMs can be found all around the country. All of the ATM's offer foreign language options and pay out Euros. Cash withdrawal limits vary from bank to bank.

Foreign exchange offices, are widespread. Operating hours are mostly Monday to Saturday from 09:00 closing time depends on the area they are located. Banks are open from 08:00 until 14:00. Within the arrival hall of the airport there is also a eurochange office which operates 24hrs, 365 days. No other currency than the Euro is accepted in Greece

Credit cards are widely used and accepted. All credit cards are accepted besides Amex and Diner's. Love to go shoe-shopping? Love eco-friendly products? Want to find everything you need in a single store? You seek items of luxury and high aesthetics when you go shopping? You look for 'treasures' from old times, works of art in out-of-the-way places or original materials for your own personal creations? Whichever type of shopper you are, Athens is not going to let you down.

GENERAL INFORMATION

Opening Hours

Store hours are usually:
Monday, Wednesday, Saturday - 8:30 am to 3:00 pm.
Tuesday, Thursday, Friday - 8:30 am to 2:00 pm and 5:00 pm to 8:00 pm.

Large department stores:
Monday to Friday - 8:30 am to 8:00 pm.
Saturday - 8:30 am to 3:00 pm.

Health Insurance and Health Emergencies

The organizers will accept no liability for personal injuries sustained by or for loss or damage to property belonging to Congress participants, either during or as a result of the Congress or during all events. Participants are strongly recommended to seek insurance coverage for health and accident. There will be an ambulance at the venue through the conference dates in case of an emergency.

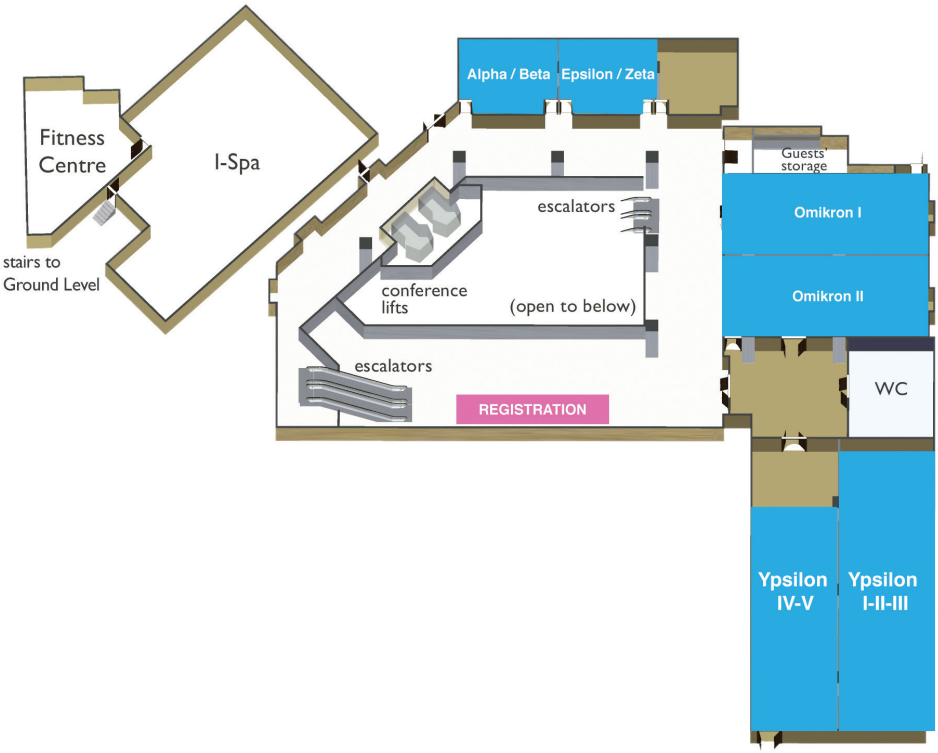
FLOOR PLANS

LOBBY LEVEL

The rooms indicated in blue colour will be used for satellite events.

Poster Session Hall

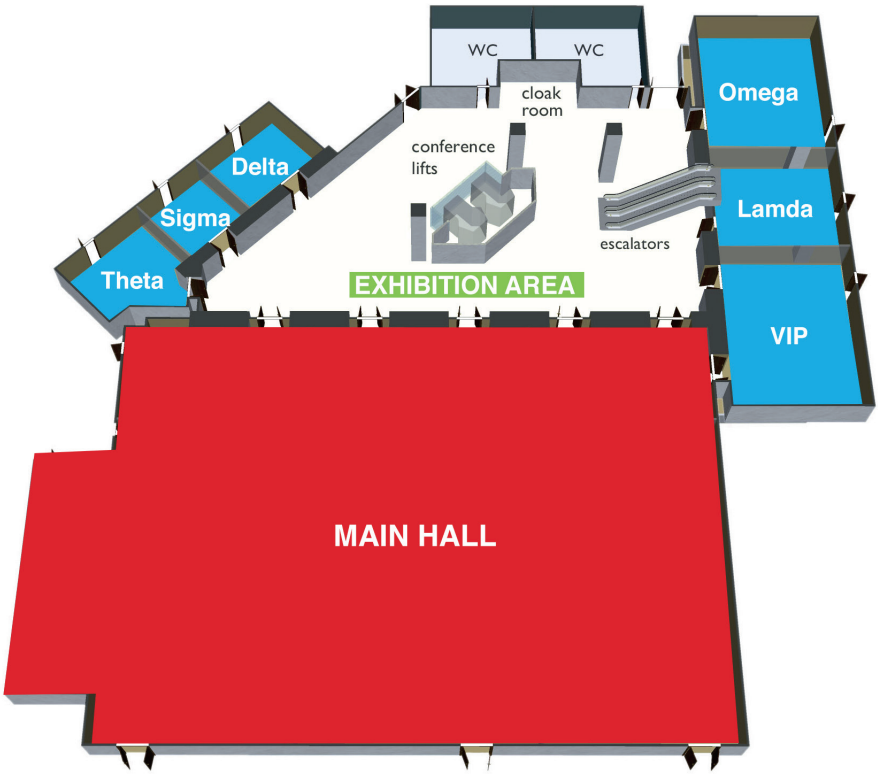
LEVEL -1



The rooms indicated in blue colour will be used for satellite events.

FLOOR PLANS

LEVEL –2



The rooms indicated in blue colour will be used for satellite events.

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PHILIPS

SPECIAL AND SOCIAL EVENTS

MICCAI Student Board Academia & Industry Event

17 October 2016, 6:30 PM - 9:00 PM | Ypsilon 1-2-3 Meeting Room

The Academia & Industry event aims to allow students to answer their most pressing questions and interact directly with professionals from academia and industry. We will first have a panel discussion with top academics and industry representatives, followed by a networking session where students can talk one-on-one with the panelists and with additional invitees from different universities and companies. This is a great opportunity to learn more about different career paths and create connections!

MICCAI Women Networking Lunch

19 October 2016, 13:00 - 14:00 / Omega-Lamda Meeting Room
A Women in Medical Image Computing and Computer Aided Interventions luncheon was held at MICCAI 2016 to provide a platform to discuss gender-related issues in the field. Medical image analysis and Computer Aided Interventions have seen tremendous progress in scientific methodology and clinical applications in recent years. However, despite the rapid progress and the growth of the field, women continue to be an under-represented minority in the community, both in academia and in industry. Particularly, fewer women have senior roles in these communities compared to number of female students and junior researchers. In addition to discussions on the issue of under-representation, other goals of the luncheon were to allow researchers to network, to increase the visibility of senior female researchers who can serve as role models to students and junior researchers, and to identify concrete action items towards creating more inclusive work and meeting environments. The action items and the outcomes of the luncheon can be extended to other conferences and events of the biomedical imaging community at large. To monitor progress and maintain continuity, a similar event will be held next year at MICCAI 2017.

MICCAI Jogging

18 October 2016, 7:00 AM
19 October 2016, 7:00 AM
20 October 2016, 7:00 AM

Lead: Andrew Melbourne

Join us for morning runs through ancient Athens, home of the modern athlete and final destination of the famous Pheidippides.
Meet at the lobby of the InterContinental Athenaeum Athens at 7:00 AM to join the runs on Tuesday, Wednesday and Thursday. Similar to previous years in Boston and Munich, the total length of each run will be between 5 and 8 kilometres and we'll take the pace of the slowest runner, so do come along whatever your pace! Also remember that Athens is not entirely flat and early morning temperatures are likely to be in the low 20°C's (~70°F). As with all physical exercise, participants must be in good physical health and should be fit to participate.

MICCAI Soccer and Basketball

20 October 2016, 2016 6:00 PM - 7:30 PM

Lead: Chris Chatzichristos

Be part of the glorious return of MICCAI Sports and join the Soccer or Basketball team to compete on Thursday night from 6:00 to 7:30 PM.
When: Thursday night, 6:00 to 7:30 PM
Where: Meet at the lobby at 5:30 PM
Please be on time, as we will use public transportation to get to the courts.
As with all physical exercise, participants must be in good physical health.

MICCAI DAILY Magazine

For the first time ever, MICCAI 2016 will be complemented by the publication of a MICCAI Daily magazine. It will be brought to your mailboxes every morning during the conference by the online magazine Computer Vision News (published by RSIP Vision), with whom we have partnered to offer this novelty to the MICCAI community. All you will need to do is to check your mailbox every morning: you will find there the MICCAI Daily with its many sections: presentations, reviews, interviews, the picks of the day and many more: all of them will put an additional spotlight on MICCAI presenters and attendees. You can already read Computer Vision News and subscribe for free at http://www.rsipvision.com/computer-vision-news/
We look forward to the first MICCAI Daily, on October 18 in Athens!.

GALA DINNER

The Nasioutzik Estate in Spata -a natural balcony to the Attica region, which releases the eye as far as the island of Evia, resembles a historical discovery more than a modern structure, just as if it was there... waiting to be discovered. The architecture takes the form of the Greek letter "Π", which is the traditional shape of the Orthodox monasteries. It is situated on the top of a magical hill and looks towards the sun.

The sense of eternal mystery unravels upon entrance through giant wooden Byzantine doors which lead one directly into the temple dedicated to Saint George and Saint Demetrius. The unique magnificence of this structure, with its beauty and items of all ages, the work of art and Byzantine flavor...

*** Buses will depart from the hotel starting from 18:15 pm.**

Tuesday, October 18 • 12:00-13:00

Clare Tempany, MD

Dr. Clare Tempany MB BAO, BCH, a graudate of the Royal College of Surgeons in Dublin, Ireland, is a Professor of Radiology at Harvard Medical School and the Ferenc Jolesz Chair of Radiology Research in the Department of Radiology, Brigham & Women's Hospital Boston. She is the Principal Investigator of the P41 National Center of Image Guided Therapy (NCIGT) grant and the Medical Director of the Advanced Multimodal Image-Guided Operating (AMIGO) suite. Dr. Tempany is an expert in Body MRI, specifically, Pelvic MRI. Her research interests include Pelvic Oncology, specifically, prostate cancer. She leads a large Prostate research program, which includes diagnostic, staging, and MR/US guided interventions (in-bore biopsy) and treatment guidance (Brachytherapy, Cryotherapy & MRgFUS) programs. Other interests are in image-guided therapy including computer-assisted technology development for multi-modal image display in the operating room. She is an active NIH investigator with multiple grants to support these efforts including the NCIGT, and a BRP, for enabling technologies, including robotics in prostate interventions. She is currently leading multiple clinical trials of mpMRI in prostate cancer, a leader in the international prostate working group and co-developer of the latest PIRADS v2 guidelines for prostate mpMRI, the MRgFUS devices for clinical MR-guided Focused Ultrasound Surgery. She has completed three trials in the use of MRgFUS for treatment of uterine fibroids and an on-going trial for treatment of Metastatic bone tumors for palliation of pain (BM004). Along with the NCIGT teams with Nathan McDannold, they continue research in this area as applied for MRgFUS for prostate cancer. She teaches and lectures widely on a regular basis and mentors and educates students from local Boston Insitutions and beyond.

Multi-modal Image guided therapy: Novel personalized approaches in Oncology and beyond.

Multi-Modal Image guided therapy is a major focus of translational research and clinical practice worldwide. Imaging techniques, systems platforms, computer science and devices are rapidly being deployed in unconventional environments. The National center for image guided therapy (NCIGT) at our institution, is dedicated to improving patient care through novel and diverse ways of integrating imaging in all its forms directly into patient care. This lecture will provide a broad overview of the field of image-guided surgery, image guided radiation and interventions. Techniques to be discussed will include MRI, Computed CT, MRI, PET/CT, mass spectrometry and MR guided Focused Ultrasound surgery (MRgFUS). Illustrative examples will include Brain Lung, Gynecological and Prostate cancers. There are multiple applications in cancer detection, characterization, staging, therapy monitoring and assessment of treatment response.

KEYNOTES

Wednesday, October 19 • 12:00-13:00

Yoav Medan, PhD

Dr. Yoav Medan, a social and technology entrepreneur, is currently a visiting scientist and an adjunct lecturer at the Technion Faculties of Electrical Engineering and Biomedical Engineering. Joining the Technion Faculty in 2012 after a lengthy career in industry as a visiting associate professor in Biomedical Engineering, Dr. Medan also teaches a course on entrepreneurship to engineering undergraduates, as part of a new minor degree track in Entrepreneurship. In addition, Dr. Medan is a mentor to entrepreneurs in the medical device field through the Technion for Life Alumni program, the Technion BizTec and MassChallenge programs. Prior to that Dr. Medan served as Vice President, Chief Systems Architect (1999-2011) of InSightec Ltd, A medical device company pioneering non-invasive MR- Guided Focused Ultrasound surgery. From 1984 through 1998 Dr. Medan held various senior research and management positions at the IBM Haifa Research Laboratory. In 2013 Dr. Medan founded Haifa3D, a new non-profit open hub for 3D digital fabrication, hosted by the Tiltan College at the Haifa Port Campus. In 2014 he cofounded NiniSpeech Ltd., a startup company developing a real-time mobile biofeedback solution for people who stutter.

Curing with Sound – Image Guided Noninvasive Interventions Using Focused Ultrasound

While Ultrasound is best known as a diagnostic imaging modality, the talk will introduce Focused Ultrasound (FUS) - an emerging non-invasive medical intervention modality. The talk will broadly review the underlying science and technology principles, as well as the past, present and future research frontiers and clinical systems. The multiple mechanisms of FUS action and the unique role of imaging modalities in guiding and controlling the intervention in real-time will be demonstrated as part of current and future clinical applications. Such applications include tumor ablation, functional neurological disorders such as Parkinson and Essential Tremor, cardiovascular, targeted drug delivery and immunotherapy. As the unique clinical safety and efficacy profiles are being established, adoption is lagging due to a number of factors to be discussed. It is hoped that this talk will help gain public awareness and acceptance by all stakeholders.

Thursday, October 20 • 12:00-13:00

Kamil Uğurbil, PhD,

Kamil Ugurbil, Ph.D., is professor of Medicine, Neurosciences, and Radiology, and founding director of the Center for Magnetic Resonance Research (CMRR). He is one of the principal investigators of the Human Connectome Project (HCP), funded by US National Institutes of Health. Dr. Ugurbil is a pioneer in the arena of high-field MR development. He has extensive experience in leading major technology development efforts, including the world's first 7T scanner that provided preliminary data for the HCP grant. Within the CMRR, Dr. Ugurbil and his team have built a center with unique instrumentation and expertise that allows scientists to study Alzheimer's disease, schizophrenia, and other areas of brain science, as well as heart disease, cancer and metabolic disorders.

Advances in Diffusion Imaging in the Human Connectome Project

The NIH funded Human Connectome Project targeted scanning 1200 individuals using diffusion imaging and resting state fMRI, complemented with extensive anatomical, task dependent fMRI, and behavioral and genetic data. Significant effort was invested in the first two years of this project to introduce advances in data collection, primarily based on achieving highly accelerated data acquisition, leading to transformative new approaches to both diffusion imaging and resting state fMRI. Instrumental improvements also were critical, particularly impacting diffusion imaging. Combined gains have allowed collection of data with previously unavailable spatial resolution and q-space sampling both at 3 Tesla and 7Tesla, attaining new level of accuracy in connectivity measures. This lecture will describe these methodological and technical developments and the impact they have had on measures of brain connectivity, with particular focus on diffusion imaging.

CONFERENCE PROGRAM

Tuesday, October 18

09:00 - 09:30 **Welcome**

09:30 - 10:30 **Oral Session 1 - MIC Clinical Applications of Imaging**

Chairs: Anne Martel and Mauricio Reyes

Clinical Imaging Biomarker Discovery for Lung Cancer Survival Prediction
Jiawen Yao, Sheng Wang, Xinliang Zhu, Junzhou Huang

Integrative Analysis of Cellular Morphometric Context Reveals Clinically Relevant Signatures in Lower Grade Glioma
Ju Han, Yunfu Wang, Weidong Cai, Alexander Borowsky, Bahram Parwin, Hang Chang

Hand-held Sound-Speed Mammography Based on Ultrasound Reflector Tracking
Sergio J Sanabria, Orcun Goksel

Prostate Cancer: Improved Tissue Characterization by Temporal Modeling of Radio-Frequency Ultrasound Echo Data
Layan Nahlawi, Farhad Imani, Mena Gaed, Jose A. Gomez, Madeleine Moussa, Eli Gibson, Aaron Fenster, Aaron Ward, Purang Abolmaesumi, Hagit Shatkay, Parvin Mousavi

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

10:30 - 12:00 **Poster Session 1 - Computer Aided Interventions**
Brain Analysis 1, Machine Learning 1,Surgical Guidance and Tracking, Cardiac Image Analysis

12:00 - 13:00 **Keynote 1: Lecture: Prof. Clare Tempany**

13:00 - 14:00 **Lunch**

14:00 - 16:00 **Oral Session 2 MIC - MIC Machine Learning and Statistics**

Chairs: Tal Arbel and M.Jorge Cardoso

Regressing Heatmaps for Multiple Landmark Localization Using CNNs
Christian Payer, Darko Stern, Horst Bischof, Martin Urschler

Detection of Differentiated vs. Undifferentiated Colonies of iPS Cells Using Random Forests Modeled with the Multivariate Polya Distribution
Bisser Raytchev, Atsuki Masuda, Masatoshi Minakawa, Kojiro Tanaka, Takio Kurita, Toru Imamura, Masashi Suzuki, Toru Tamaki, Kazufumi Kaneda

Early Diagnosis of Alzheimer's Disease by Joint Feature Selection and Classification on Temporally Structured Support Vector Machine
Yingying Zhu, Xiaofeng Zhu, Minjeong Kim, Dinggang Shen, Guorong Wu

Multi-Input Cardiac Image Super-Resolution using Convolutional Neural Networks
Ozan Oktay, Wenjia Bai, Metthew Lee, Ricardo Guerrero, Konstantinos, Kamnitsas, Jose Cabellero, Antonio M Simoes Monteiro de Marvao, Stuart Cook, Declan O'Regan, Daniel Rueckert

Low-Dimensional Statistics of Anatomical Variability Via Compact Representation of Image Deformations
Miaomiao Zhang, William Sandy Wells, Polina Golland

Mapping Lifetime Brain Volumetry with Covariate-Adjusted Restricted Cubic Spline Regression from Cross-sectional Multi-site MRI
Yuankai Huo, Katherine Aboud, Hakmook Kang, Laurie Cutting, Bennett Landman

Riemannian Statistical Analysis of Cortical Geometry with Robustness to Partial Homology and Misalignment
Suyash P. Awate, Richard Leahy, Anand Joshi

Barycentric subspace analysis: a new symmetric group-wise paradigm for cardiac motion tracking
Marc-Michel Rohé, Maxime Sermesant, Xavier Pennec

16:00 - 16:30 **Coffee Break**

16:00 - 17:30 **Poster Session 2**
Brain Analysis 2 (Connectivity), Deep Learning in Medical Imaging, Computer Aided Interventions, Vascular Image Analysis

CONFERENCE PROGRAM

Wednesday, October 19

09:00 - 10:30 **Oral Session 3 CAI- CAI Computer Aided Interventions**

Chairs: Lena Maier-Hein and Pierre Jannin

Efficient Anatomy Driven Automated Multiple Trajectory Planning for Intracerebral Electrode Implantation
Rachel Sparks, Gergely Zombori, Roman Rodionov, Maria A. Zuluaga, Anna Miserocchi, Andrew W. McEvoy, John Duncan, Sebastien Ourselin

Robust Image Descriptors for Real-Time Inter-Examination Retargeting in Gastrointestinal Endoscopy
Menglong Ye, Edward Johns, Benjamin Walter, Alexander Meining, Guang Zhong Yang

Classifying Cancer Grades Using Temporal Ultrasound for Transrectal Prostate Biopsy
Shekoofeh Azizi, Farhad Imani, Jin Tae Kwak, Amir Tahmasebi, Sheng Xu, Pingkun Yan, Jochen Kruecker, Baris Turkbey, Peter Choyke,Peter Pinto, Bradford Wood, Parvin Mousavi, Purang Abolmaesum

2D-3D Registration Accuracy Estimation for Optimised Planning of Image-guided Pancreatobiliary Interventions
Yipeng Hu, Ester Bonmati, Eli Gibson, John Hipwell, David Hawkes, Steven Bandula, Stephen Pereira, Dean Barratt

Recognizing Surgical Activities with Recurrent Neural Networks
Robert DiPietro, Colin Lea, Anand Malpani, Narges Ahmidi, Swaroop Vedula, Gyusung I. Lee, Mija R. Lee, Gregory D. Hager

A Novel Simulation Method to Improve Facial Soft Tissue Prediction Accuracy for Orthognathic Surgery
Daeseung Kim, Chien-Ming Chang, Dennis Chun-Yu Ho, Xiaoyan Zhang, Shunyao Shen, Peng Yuan, Huaming Mai, Guangming Zhang, Xiabo Zhou, Jaime Gateno, Michael A.K. Liebschner, James. J. Xia

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

10:30 - 12:00 **Poster Session 3**
Brain Analysis 3 (Cortical Morphology), Machine Learning and Applications, Ultrasound Image Analysis,Registration and Deformation Estimation, Cell Image Analysis

12:00 - 13:00 **Keynote 2: Lecture: Prof. Yoav Medan**

13:00 - 14:00 **Lunch**

14:00 - 14:20 **MICCAI Society Business Update Meeting**

14:20 - 16:20 **Oral Session 4 MIC - MIC Advanced Imaging Techniques**

Chairs: Lauren O'Donnell and Bennett Landman

Predictive Subnetwork Extraction with Structural Priors for Infant Connectomes
Colin J. Brown, Steven P. Miller, Brian G. Booth, Jill G. Zwicker, Ruth E. Grunau, Anne R. Synnes, Vann Chau, Ghassan Hamarneh

Extracting the Core Structural Connectivity Network: Guaranteeing Network Connectedness Through a Graph-Theoretical Approach
Demian Wassermann, Dorian Mazauric, Guillermo Alejandro Gallardo Diez, Rachid Deriche

Outcome Prediction for Patient with High-grade Gliomas from Brain Functional and Structural Networks
Luyan Liu, Han Zhang, Islem Rekik, Qian Wang, Dinggang Shen

A Continuous Model of Cortical Connectivity
Daniel Moyer, Boris Gutman, Joshua Faskowitz, Neda Jahanshad, Paul Thompson

Correction of Fat-Water Swaps in Dixon MRI
Ben Glocker, Ender Konukoglu, Ioannis Lavdas, Juan Eugenio Iglesias, Eric O Aboagye, Andrea G Rockall, Daniel Rueckert

4D Phase-Contrast Magnetic Resonance CardioAngiography (4D PC-MRCA) creation from 4D flow MRI
Mariana Bustamante, Vikas Gupta, Carl-Johan Carlhäll, Tino Ebbers

3D Imaging from Video and Planar Radiography
Julien Pansiot, Edmond Boyer

ASL-incorporated Pharmacokinetic Modelling of PET Data with Reduced Acquisition Time: Application to Amyloid Imaging
Catherine J. Scott, Jieqing Jiao, Andrew Melbourne, Jonathan M. Schott, Brian F. Hutton, Sebastien Ourselin

16:20 - 16:50 **Coffee Break**

16:20 - 17:50 **Poster Session 4**
Alzheimers Disease, Segmentation 1, Shape Modeling

18:15 Bus Departure for the Gala Dinner

CONFERENCE PROGRAM

Thursday, October 20

09:00 - 10:30 **Oral Session 5 MIC- MIC Segmentation**

Chairs: Ivana Isgum and Demian Wassermann

Multi-Task Shape Regression for Medical Image Segmentation
Xiantong Zhen, Shuo Li

Deep Fusion Net for Multi-Atlas Segmentation: Application to Cardiac MR Images
Heran YANG, Jian SUN, Huibin LI, Lisheng WANG, Zongben XU

Enhanced Probabilistic Label Fusion by Estimating Label Confidences through Discriminative Learning
Oualid M. Benkarim, Gemma Piella, Miguel A. González Ballester, Gerard Sanroma

Transfer Shape Priors Towards High-throughput Microscopy Image Segmentation
Fuyong Xing, Xiaoshuang Shi, Zizhao Zhang, Jinzheng Cai, Yuanpu Xie, Lin Yang

Mammographic Mass Segmentation with Online Learned Shape and Appearance Priors
Menglin Jiang, Shaoting Zhang, Yuanjie Zheng, Dimitris Metaxas

HeMIS: Hetero-Modal Image Segmentation
Mohammad Havaei, Nicolas Guizard, Nicolas Chapados, Yoshua Bengio

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

10:30 - 12:00 **Poster Session 5**

MR Image Analysis, Segmentation 2, Reconstruction, Cancer Image Analysis

12:00 - 13:00 **Keynote 3: Lecture: Prof. Kamil Ugurbil**

13:00 - 14:00 **Lunch**

14:00 - 15:30 **Oral Session 6- CAI Interventional Guidance**

Chairs: Orcun Goksel and Ken Masamune

3D imaging and localization of peripheral blood vessels based on near infrared stereo vision, ultrasound, and real-time image analysis
Alvin Chen, Max Balter, Tim Maguire, Martin Yarmush

The Endoscopogram: a 3D Model Reconstructed from Endoscopic Video Frames
Qingyu Zhao, True Price, Stephen Pizer, Marc Niethammer, Ron Alterovitz, Julian Rosenman

Structure-Aware Rank-1 Tensor Approximation for Curvilinear Structure Tracking Using Learned Hierarchical Features
Peng Chu, Yu Pang, Erkang Cheng, Ying Zhu, Yefeng Zheng, Haibin Ling

3D Ultrasonic Needle Tracking with a 1.5D Transducer Array for Guidance of Fetal Interventions
Wenfeng Xia, Simeon West, Jean-Martial Mari, Sebastien Ourselin, Anna David, Adrien Desjardins

Bioelectric Navigation: A New Paradigm for Intravascular Device Guidance
Bernhard Fuerst, Erin Sutton, Reza Ghotbi, Noah Cowan, Nassir Navab

Registration-Free Simultaneous Catheter and Environment Modelling
Liang Zhao, Stamatia Giannarou, Su-Lin Lee, Guang Zhong Yang

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

16:00 - 17:00 **Awards and Closing Ceremony**

POSTER SESSIONS

Tuesday, October 18

10:30 - 12:00 Poster Session 1

B1: Brain Analysis 1

PS1 - 1 **Ordinal Patterns for Connectivity Networks in Brain Disease Diagnosis**
Mingxia Liu, Junqiang Du, Biao Jieo, Daoqiang Zhang

PS1 - 2 **Discovering Cortical Folding Patterns in Neonatal Cortical Surfaces Using Large-scale Dataset**
Yu Meng, Gang Li, Li Wang, Weili Lin, John Gilmore, Dinggang Shen

PS1 - 3 **Modeling Functional Dynamics of Cortical Gyri and Sulci**
Xi Jiang, Xiang Li, Jinglei Lv, Shijie Zhao, Shu Zhang, Wei Zhang, Tuo Zhango, Tianming Liu

PS1 - 4 **A Multi-Stage Sparse Coding Framework to Explore the Effects of Prenatal Alcohol Exposure**
Shijie Zhao, Junwei Han, Jinglei Lv, Xi Jiang, Xintao Hu, Shu Zhang, Mary Ellen Lynch, Claire Coles, Lei Guo, Xiaoping Hu, Tianming Liu

PS1 - 5 **Correlation-Weighted Sparse Group Representation for Brain Network Construction in MCI Classification**
Renping Yu, Han Zhang, Le An, Xiaobo Chen, Zhihui Wei, Dinggang Shen

PS1 - 6 **Temporal Concatenated Sparse Coding of Resting State fMRI Data Reveal Network Interaction Changes in mTBI**
Jinglei Lv,Armin Iraji,Fangfei Ge,Shijie Zhao,Xintao Hu,Tuo Zhang,Junwei Han,Lei Guo,Zhifeng Kou,Tianming Liu

PS1 - 7 **Exploring Brain Networks via Structured Sparse Representation of FMRI Data**
Qinghua Zhao, Jianfeng Lu, Jinglei Lv, Xi Jiang, Shijie Zhao, Tianming Liu

PS1 - 8 **Discover Mouse Gene Coexpression Landscape Using Dictionary Learning and Sparse Coding**
Yujie Li, Hanbo Chen, Xi Jiang, Xiang Li, Jinglei Lv, Hanchuan Peng, Joe Tsien, Tianming Liu

PS1 - 9 **Integrative Analysis of Cellular Morphometric Context Reveals Clinically Relevant Signatures in Lower Grade Glioma**
Ju Han, Yunfu Wang, Weidong Cai, Alexander Borowsky, Bahram Parvin, Hang Chang

PS1 - 10 **Mapping Lifetime Brain Volumetry with Covariate-Adjusted Restricted Cubic Spline Regression from Cross-sectional Multi-site MRI**
Yuankai Huo, Katherine Aboud, Hakmook Kang, Laurie Cutting, Bennett Landman

PS1 - 11 **Extracting the Core Structural Connectivity Network: Guaranteeing Network Connectedness Through a Graph-Theoretical Approach**
Demian Wassermann, Dorian Mazauric, Guillermo Alejandro Gallardo Diez, Rachid Deriche

PS1 - 12 **Fiber Orientation Estimation Using Nonlocal and Local Information**
Chuyang Ye

ML1: Machine Learning 1

PS1 - 13 **Feature Selection Based on Deep Canonical Correlation Analysis for Automatic Diagnosis of Parkinsons Disease**
Luyan Liu, Qian Wang,Ehsan Adeli, Lichi Zhang, Han Zhang, Dinggang Shen

PS1 - 14 **Identifying Relationships in Functional and Structural Connectome Learning Method Data Using a Hypergraph**
Brent Munsell, Guorong Wu, Yue Gao, Nicholas Desisto, Martin Styner

PS1 - 15 **Ensemble Hierarchical High-Order Functional Connectivity Networks for MCI Classification**
Xiaobo Chen, Han Zhang, Dinggang Shen

PS1 - 16 **Outcome Prediction for Patient with High-grade Gliomas from Brain Functional and Structural Networks**
Luyan Liu, Han Zhang, Islem Rekik, Qian Wang, Dinggang Shen

PS1 - 17 **Mammographic Mass Segmentation with Online Learned Shape and Appearance Priors**
Menglin Jiang, Shaoting Zhang, Yuanjie Zheng, Dimitris Metaxas

PS1 - 18 **Differential dementia diagnosis on incomplete data with Latent Trees**
Christian Ledig, Sebastian Kaltwang, Antti Tolonen, Juha Koikkalainen, Philip Scheltens, Frederik Barkhof, Hanneke Rhodius-Meester, Betty Tijms, Afina W. Lemstra, Wiesje van der Flier, Jyrki Lötjönen, Daniel Rueckert

PS1 - 19 **Bridging Computational Features toward Multiple Semantic Features with Multi-Task Regression: A Study of CT Pulmonary Nodules**
Sihong Chen, Dong Ni, Jing Qin, Baiying Lei, Tianfu Wang, Jie-Zhi Cheng

PS1 - 20 **Robust Cancer Treatment Outcome Prediction Dealing with Small-Sized and Imbalanced Data from FDG-PET Images**
Chunfeng Lian, Su Ruan, Thierry Denœux, Hua Li, Pierre Vera

POSTER SESSIONS

PS1 - 21 Structured Sparse Feature Selection and Kernel Learning for Imaging Genetics Based Alzheimers disease Diagnosis
Jialin Peng, Le An, Xiaofeng Zhu, Yan Jin, Dinggang Shen

PS1 - 22 Semi-supervised Hierarchical Multimodal Feature and Sample Selection for Alzheimers Disease Diagnosis Blind
Le An, Ehsan Adeli, Mingxia Liu, Jun Zhang, Dinggang Shen

PS1 - 23 Stability-Weighted Matrix Completion of Incomplete Multi-Modal Data for Disease Diagnosis Anonyms
Kim-Han Thung, Ehsan Adeli, Pew-Thian Yap, Dinggang Shen

PS1 - 24 Employing Visual Analytics to Aid the Design of White Matter Hyperintensity Classifiers
Renata Raidou, Hugo Kuijf, Neda Sepasian, Nicola Pezzotti, Willem Bouvy, Marcel Breeuwer, Anna Vilanova

CAI1: Surgical Guidance and Tracking

PS1 - 25 3D Ultrasonic Needle Tracking with a 1.5D Transducer Array for Guidance of Fetal Interventions
Wenfeng Xia, Simeon West, Jean-Martial Mari, Sebastien Ourselin, Anna David, Adrien Desjardins

PS1 - 26 Enhancement of Needle Tip and Shaft from 2D Ultrasound Using Signal Transmission Maps
Cosmas Mwikirize, John L. Nosher, Ilker Hacihaliloglu

PS1 - 27 Plane Assist: The Influence of Haptics on Ultrasound-based Needle Guidance
Heather Culbertson, Julie Walker, Michael Raitor, Allison Okamura, Philipp Stolka

PS1 - 28 A Surgical Guidance System for Big-Bubble Deep Anterior Lamellar Keratoplasty
Hessam Roodaki, Chiara Amat di San FilippoDaniel Zapp, Nassir Navab, Abouzar Eslami

PS1 - 29 Towards Automated Ultrasound Transesophageal Echocardiography and X-Ray Fluoroscopy Fusion using an Image-based Co-registration Method
Shanhui Sun, Shun Miao, Tobias Heimann, Terrence Chen, Markus Kaiser, Matthias John, Erin Girard, Rui Liao

PS1 - 30 Robust, Real-time, Dense and Deformable 3D Organ Tracking in Laparoscopic Videos
Toby Collins, Adrien Bartoli, Nicolas Bourdel, Michel Canis

PS1 - 31 Structure-Aware Rank-1 Tensor Approximation for Curvilinear Structure Tracking Using Learned Hierarchical Features
Peng Chu, Yu Pang, Erkang Cheng, Ying Zhu, Yefeng Zheng, Haibin Ling

PS1 - 32 Real-Time Online Adaption for Robust Instrument Tracking and Pose Estimation
Nicola Rieke, David Joseph Tan, Federico Tombari, Josué Page Vizcaíno, Chiara Amat di San Filippo, Abouzar Eslami, Nassir Navab

PS1 - 33 Integrated Dynamic Shape Tracking and RF Speckle Tracking for Cardiac Motion Analysis
Nripesh Parajuli, Allen Lu, John C Stendahl, Maria Zontak, Nabil Boutagy, Melissa Eberle, Imran Alkhalil, Matthew O'Donnell, Albert J Sinusas, James S Duncan

PS1 - 34 The Endoscopogram: a 3D Model Reconstructed from Endoscopic Video Frames
Qingyu Zhao,True Price, Stephen Pizer, Marc Niethammer, Ron Alterovitz, Julian Rosenman

PS1 - 35 Robust Image Descriptors for Real-Time Inter-Examination Retargeting in Gastrointestinal Endoscopy
Menglong Ye, Edward Johns, Benjamin Walter, Alexander Meining, Guang Zhong Yang

PS1 - 36 Kalman Filter Based Data Fusion for Needle Deflection Estimation Using Optical-EM Sensor
Baichuan Jiang, Wenpeng Gao, Daniel Kacher, Thomas Lee, Jayender Jagadeesan

PS1 - 37 Bone Enhancement in Ultrasound Based on 3D Local Spectrum Variation for Percutaenous Scaphoid Fracture Fixation
Emran Mohammad Abu Anas, Alexander Seitel, Abtin Rasoulian, Paul John, Tamas Ungi, Andras Lasso, Kathryn Darras, David Wilson, Victoria Lessoway, Gabor Fichtinger, Michelle Zec, David R. Pichora, Parvin Mousavi, Robert Rohling, Purang Abolmaesumi

PS1 - 38 Bioelectric Navigation: A New Paradigm for Intravascular Device Guidance
Bernhard Fuerst, Erin Sutton, Reza Ghotbi, Noah Cowan, Nassir Navab

CARD: Cardiac Image Analysis

PS1 - 39 Identifying Patients at Risk for Aortic Stenosis through Multimodal Learning
Tanveer Syeda-Mahmood, Yufan Guo, Mehdi Moradi, David Beymer, Deepta Rajan, Yu Cao, Yaniv Gur, Mohammadreza Negahdar

PS1 - 40 Multi-Input Cardiac Image Super-Resolution using Convolutional Neural Networks
Ozan Oktay, Wenjia Bai, Matthew Lee, Ricardo Guerrero, Konstantinos Kamnitsas, Jose Caballero, Antonio M Simoes Monteiro de Marvao, Stuart Cook, Declan O'Regan, Daniel Rueckert

POSTER SESSIONS

PS1 - 41 GPNLPerf: Robust 4D non-rigid motion correction for Myocardial Perfusion analysis
Sheshadri Thiruvenkadam, Shriram K S, Bhushan Patil, Gogin Nicolas, Maxime Teisseire, Cyril Cardon, Jerome Knoplioch, Navneeth Subramanian, Rakesh Mullick, Sandeep Kaushi

PS1 - 42 Recognizing End-diastole and End-systole Frames via Deep Temporal Regression Network
Bin Kong, Yiqiang Zhan, Min Shin, Tom Denney, Shaoting Zhang

PS1 - 43 Basal Slice Detection using Long-Axis Segmentation for Cardiac Analysis
Mahsa Paknezhad, Michael Brown, Stephanie Marchesseau

PS1 - 44 Spatially-Adaptive Multi-Scale Optimization for Local Parameter Estimation: Application in Cardiac Electrophysiological Models
Jwala Dhamala, John Sapp, Milan Horacek, Linwei Wang

PS1 - 45 Reconstruction of Coronary Artery Centrelines from X-ray Angiography using a Mixture of Students T-distributions
Serkan Çimen, Ali Gooya, Nishant Ravikumar, Zeike Taylor, Alejandro Frangi

PS1 - 46 Barycentric Subspace Analysis: A New Symmetric Group-Wise Paradigm For Cardiac Motion Tracking
Marc-Michel Rohé, Maxime Sermesant, Xavier Pennec

16:00 - 17:30 Poster Session 2

B2: Brain Analysis 2 (Connectivity)

PS2 - 1 **Reveal Consistent Spatial-Temporal Patterns from Dynamic Functional Connectivity for Autism Spectrum Disorder Identification**
Yingying zhu, Xiaofeng Zhu, Han Zhang, Wei Gao, Dinggang Shen, Guorong Wu

PS2 - 2 **Boundary Mapping through Manifold Learning for Connectivity-Based Cortical Parcellation**
Salim Arslan,Sarah Parisot, Daniel Rueckert

PS2 - 3 **Species Preserved and Exclusive Structural Connections Revealed by Sparse CCA**
Xiao Li, Lei Du, Tuo Zhang, Xintao Hu, Xi Jiang, Lei Guo, Tianming Liu

PS2 - 4 **Modularity Reinforcement for Improving Brain Subnetwork Extraction**
Chendi Wang, Bernard Ng, Rafeef Abugharbieh

PS2 - 5 **Effective Brain Connectivity Through a Constrained Autoregressive Model**
Alessandro Crimi, Luca Dodero, Vittorio Murino, Diego Sona

PS2 - 6 **GraMPa: Graph-based Multi-modal Parcellation of the Cortex using Fusion Moves**
Sarah Parisot, Ben Glocker, Markus D Schirmer, Daniel Rueckert

PS2 - 7 **A Continuous Model of Cortical Connectivity**
Daniel Moyer, Boris Gutman, Joshua Faskowitz, Neda Jahanshad, Paul Thompson

PS2 - 8 **Label-Informed Non-Negative Matrix Factorization with Manifold Regularization for Discriminative Subnetwork Detection**
Takanori Watanabe, Birkan Tunc, Drew Parker, Junghoon Kim, Ragini Verma

PS2 - 9 **Predictive Subnetwork Extraction with Structural Priors for Infant Connectomes**
Colin J. Brown, Steven P. Miller, Brian G. Booth, Jill G. Zwicker, Ruth E. Grunau, Anne R. Synnes, Vann Chau, Ghassan Hamarneh

PS2 - 10 **Hierarchical Clustering of Tractography Streamlines Based on Anatomical Similarity**
Viviana Siless, Ken Chang, Bruce Fischl, Anastasia Yendiki

PS2 - 11 **Unsupervised Identification of Clinically Relevant Clusters in Routine Imaging Data**
Johannes Hofmanninger, Markus Krenn, Thomas Schlegl, Markus Holzer, Helmut Prosch, Langs Georg

PS2 - 12 **Probabilistic Tractography for Topographically Organized Connectomes**
Dogu Baran Aydogan, Yonggang Shi

POSTER SESSIONS

ML2: Deep Learning in Medical Imaging

PS2 - 13 The Automated Learning of Deep Features for Breast Mass Classification from Mammograms
Neeraj Dhungel, Gustavo Carneiro, Andrew Bradley

PS2 - 14 Multimodal Deep Learning for Cervical Dysplasia Diagnosis
Tao Xu, Han Zhang, Xiaolei Huang, Shaoting Zhang, Dimitris Metaxas

PS2 - 15 Learning From Experts: Developing Transferable Deep Features for Patient-level Lung Cancer Detection
Wei Shen, Mu Zhou, Feng Yang, Di Dong, Caiyun Yang, Yali Zang, Jie Tian

PS2 - 16 DeepVessel: Retinal Vessel Segmentation via Deep Learning and Conditional Random Field
Huazhu Fu,Yanwu Xu, Stephen Lin, Damon W.K. Wong, Jiang Liu

PS2 - 17 Deep Retinal Image Understanding
Kevis-Kokitsi Maninis, Jordi Pont-Tuset, Pablo Arbeláez, Luc Van Gool

PS2 - 18 3D Deeply Supervised Network for Automatic Liver Segmentation from CT Volumes
Qi Dou, Hao Chen, Yueming JIN, Lequan Yu, Jing Qin, Pheng Ann Heng

PS2 - 19 Deep Neural Networks for Fast Segmentation of 3D Medical Images
Karl Fritscher, UMIT, Patrik Raudaschl, Paolo Zaffino, Maria Francesca Spadea, Greg Sharp, Rainer Schubert

PS2 - 20 SpineNet: Automatically Pinpointing Classification Evidence in Spinal MRIs
Amir Jamaludin, Timor Kadir, Andrew Zisserman

PS2 - 21 A Deep Learning Approach for Semantic Segmentation in Histology Tissue Images
Jiazhuo Wang, John D. MacKenzie, Rageshree Ramachandran, Danny Z. Chen

PS2 - 22 Spatial Clockwork Recurrent Neural Network for Muscle Perimysium Segmentation
Yuanpu Xie, Zizhao Zhang, Manish Sapkota, Lin Yang

PS2 - 23 Automated Age Estimation from Hand MRI Volumes using Deep Learning
Darko Stern, Christian Payer, Vincent Lepetit, Martin Urschler

PS2 - 24 Real-time Standard Scan Plane Detection and Localisation in Fetal Ultrasound using Fully Convolutional Neural Networks
Christian Baumgartner, Konstantinos Kamnitsas, Jacqueline Matthew, Sandra Smith, Bernhard Kainz, Daniel Rueckert

PS2 - 25 **3D Deep Learning for Multi-modal Imaging-guided Survival Time Prediction of Brain Tumor Patients**
Dong Nie, Han Zhang, Ehsan Adeli, Luyan Liu, Dinggang Shen

CAI2: Computer Aided Interventions

PS2 - 26 **Process Monitoring In The Intensive Care Unit: Assessing Patient Mobility Through Activity Analysis With A Non-Invasive Mobility Sensor**
Austin Reiter, Andy Jinhua Ma, Nishi Rawat, Christine Shrock, Suchi Saria

PS2 - 27 **Patient MoCap: Human Pose Estimation under Blanket Occlusion for Hospital Monitoring Applications**
Felix Achilles, Alexandru-Eugen Ichim, Huseyin Coskun, Federico Tombari, Soheyl Noachtar, Nassir Navab

PS2 - 28 **Numerical Simulation of Cochlear-Implant Surgery: Towards Patient-Specific Planning**
Olivier Goury, Yann Nguyen, Renato Torres, Jeremie Dequidt, Christian Duriez

PS2 - 29 **Real-time 3D Tracking of Articulated Tools for Robotic Surgery**
Menglong Ye, Lin Zhang, Stamatia Giannarou, Guang Zhong Yang

PS2 - 30 **Meaningful Assessment of Surgical Expertise: Semantic Labeling with Data and Crowds**
Marzieh Ershad, Zachary Koesters, Robert Rege, Ann Majewicz

PS2 - 31 **2D-3D Registration Accuracy Estimation for Optimised Planning of Image-guided Pancreatobiliary Interventions**
Yipeng Hu, Ester Bonmati, Eli Gibson, John Hipwell, David Hawkes, Steven Bandula, Stephen Pereira, Dean Barratt

PS2 - 32 **Registration-Free Simultaneous Catheter and Environment Modelling**
Liang Zhao, Stamatia Giannarou,Su-Lin Lee, Guang Zhong Yang

PS2 - 33 **Pareto front vs. weighted sum for automatic trajectory planning of Deep Brain Stimulation**
Noura Hamze, Jimmy Voirin, Pierre Collet, Pierre Jannin, Claire Haegelen, Caroline Essert

PS2 - 34 **Efficient Anatomy Driven Automated Multiple Trajectory Planning for Intracerebral Electrode Implantation**
Rachel Sparks, Gergely Zombori, Roman Rodionov, Maria A. Zuluaga, Anna Miserocchi, Andrew W. McEvoy, John Duncan, Sebastien Ourselin

PS2 - 35 **Recognizing Surgical Activities with Recurrent Neural Networks**
Robert DiPietro, Colin Lea, Anand Malpani, Narges Ahmidi, S. Swaroop Vedula, Gyusung I. Lee, Mija R. Lee, Gregory D. Hager

POSTER SESSIONS

PS2 - 36 A Novel Simulation Method to Improve Facial Soft Tissue Prediction Accuracy for Orthognathic Surgery
Daeseung Kim, Chien-Ming Chang, Dennis Chun-Yu Ho, Xiaoyan Zhang, Shunyao Shen, Peng Yuan, Huaming Mai, Guangming Zhang, Xiaobo Zhou, Jaime Gateno, Michael A.K. Liebschner, James J. Xia

VIA: Vascular Image Analysis

PS2 - 37 Extraction of Coronary Vessels in Fluoroscopic X-Ray Sequences Using Vessel Correspondence Optimization
Seung Yeon Shin, Soochahn Lee, Kyoung Jin Noh, Il Dong Yun, Kyoung Mu Lee

PS2 - 38 Coronary Centerline Extraction via Optimal Flow Paths and CNN Path Pruning
Mehmet Akif Gulsun, Gareth Funka-Lea, Puneet Sharma, Saikiran Rapaka

PS2 - 39 Vascular Registration in Photoacoustic İmaging By Low-Rank Alignment Via Foreground, Background and Complement Decomposition
Ryoma Bise, Yinqiang Zheng, Imari Sato, Masakazu Toi

PS2 - 40 From Real MRA to Virtual MRA: Towards an Open-Source Framework (cid:63)
Nicolas Passat, Stéphanie Salmon, Jean-Paul Armspach, Benoît Naegel, Christophe Prud'homme, Hugues Talbot, Alexandre Fortin, Simon Garnotel, Odyssée Merveille,Olivia Miraucourt, Ranine Tarabay, Vincent Chabannes, Alice Dufour, Anna Jezierska, Oivier Balédent, Emmanuel Durand, Laurent Najman, Marcela Szopos, Marc Thiriet, Julien Jomier

PS2 - 41 Improved Diagnosis of Systemic Sclerosis using Nailfold Capillary Flow
Michael Berks, Graham Dinsdale, Andrea Murray, Tonia Moore, Ariane Herrick, Chris Taylor

PS2 - 42 Tensor-based Graph-cut in Riemannian Metric Space and Its Application to Renal Artery Segmentation
Chenglong Wang, Masahiro Oda, Yuichiro Hayashi, Yasushi Yoshino, Tokunori Yamamoto, Alejandro Frangi, Kensaku Mori

PS2 - 43 Automatic, Robust, and Globally Optimal Segmentation of Tubular Structures
Simon Pezold, Antal Horváth, Ketut Fundana, Charidimos Tsagkas, Michaela Andelová, Katrin Weier, Michael Amann, Philippe C. Cattin

PS2 - 44 Dense Volume-to-Volume Vascular Boundary Detection
Jameson Merkow, Alison Marsden, David Kriegman, Zhuowen Tu

PS2 - 45 HALE: Healthy Area of Lumen Estimation for Vessel Stenosis Quantification FN
Sethuraman Sankaran, Michiel Schaap, Stanley Hunley, James Min, Charles Taylor, Leo Grady

PS2 - 46 **3D imaging and localization of peripheral blood vessels based on near infrared stereo vision, ultrasound, and real-time image analysis**
Alvin Chen, Max Balter, Tim Maguir, Martin Yarmush

PS2 - 47 **The Minimum Cost Connected Subgraph Problem in Medical Image Analysis**
Markus Rempfler, Bjoern Andres, Bjoern Menze

POSTER SESSIONS

Wednesday, October 19

10:30 - 12:00 Poster Session 3

B3: Brain Analysis 3 (Cortical Morphology)

PS3 - 1 **A Hybrid Multishape Learning Framework for Longitudinal Prediction of Cortical Surfaces and Fiber Tracts Using Neonatal Data**
Islem Rekik, Gang Li, Pew-Thian Yap, Geng Chen, Weili Lin, Dinggang Shen

PS3 - 2 **Learning-based Topological Correction for Infant Cortical Surfaces**
Shijie Hao, Gang Li, Li Wang, Yu Meng, Dinggang Shen

PS3 - 3 **Riemannian Metric Optimization for Connectivity-driven Surface Mapping**
Jin Kyu Gahm, Yonggang Shi

PS3 - 4 **Riemannian Statistical Analysis of Cortical Geometry with Robustness to Partial Homology and Misalignment**
Suyash Awate, Richard Leahy, Anand Joshi

PS3 - 5 **Modeling Fetal Cortical Expansion using Graph-Regularized Gompertz Models**
Ernst Schwartz, Gregor Kasprian, Andras Jakab, Daniela Prayer, Veronika Schöpf, Georg Langs

PS3 - 6 **Longitudinal analysis of the preterm cortex using multi-modal spectral matching**
Eliza Orasanu, Pierre-Louis Bazin, Andrew Melbourne, Marco Lorenzi, Herve Lombaert, Nikki Robertson, Giles S. Kendall, Nikolaus Weiskopf, Neil Marlow, Sebastien Ourselin

ML3: Machine Learning and Applications

PS3 - 7 **From local to global random regression forests: Exploring anatomical landmark localization**
Darko Stern, Thomas Ebner, Martin Urschler

PS3 - 8 **Regressing Heatmaps for Multiple Landmark Localization using CNNs**
Christian Payer, Darko Stern, Horst Bischof, Martin Urschler

PS3 - 9 **Self-Transfer Learning for Weakly Supervised Lesion Localization**
Sangheum Hwang, Hyo-Eun Kim

PS3 - 10 **Automatic Cystocele Severity Grading in Ultrasound by Spatio-temporal Regression**
Dong Ni, Xing Ji, Yaozong Gao, Jie-zhi Cheng, Huifang Wang, Jing Qin, Tianfu Wang, Guorong Wu, Dinggang Shen

PS3 - 11 **Graphical Modeling of Ultrasound Propagation in Tissue for Automatic Bone Segmentation**
Firat Ozdemir, Ece Ozkan, Orcun Goksel

PS3 - 12 **Bayesian Image Quality Transfer**
Ryutaro Tanno, Aurobrata Ghosh, Francesco Grussu, Enrico Kaden, Antonio Criminisi, Daniel Alexander

PS3 - 13 **Wavelet Appearance Pyramids for Landmark Detection and Pathology Classification: Application to Lumbar Spinal Stenosis**
Qiang Zhang, Abhir Bhalerao, Caron Parsons, Emma Helm, Charles Hutchinson

PS3 - 14 **A Learning-free Approach to Whole Spine Vertebra Localization in MRI**
Marko Rak, Klaus Toennies

PS3 - 15 **Automatic Quality Control for Population Imaging: A Generic Unsupervised Approach**
Mohsen Farzi, Jose Maria Pozo, Eugene V. McCloskey, Mark Wilkinson, Alejandro Frangi

PS3 - 16 **A Cross-Modality Neural Network Transform For Semi-Automatic Medical Image Annotation**
Mehdi Moradi, Yufan Guo, Yaniv Gur, Mohammadreza Negahdar, Tanveer Syeda-Mahmood

PS3 - 17 **Sub-Category Classifiers for Multi-Instance Learning and its application to Retinal Nerve Fiber Layer Visibility Classification**
Siyamalan Manivannan,Caroline Cobb, Stephen Burgess, Emanuele Trucco

PS3 - 18 **Vision-Based Classification of Developmental Disorders Using Eye-Movements**
Guido Pusiol, Esteva Andre, Michael C. Frank, Scott S. Hall, Li Fei-Fei, Arnold Milstein

PS3 - 19 **Scalable Unsupervised Domain Adaptation for Electron Microscopy**
Róger Bermúdez-Chacón,Carlos Becker, Mathieu Salzmann, Pascal Fua

PS3 - 20 **Automated Diagnosis of Neural Foraminal Stenosis Using Synchronized Superpixels Representation**
Xiaoxu He,Manas Sharma, Yilong YinGary Brahm,Ashley Mercado, Shuo Li

US: Ultrasound Image Analysis

PS3 - 21 **Hand-held Sound-Speed Mammography Based on Ultrasound Reflector Tracking**
Sergio J Sanabria, Orcun Goksel

POSTER SESSIONS

PS3 - 22 Ultrasound Tomosynthesis: A New Paradigm for Quantitative Imaging of the Prostate
Fereshteh Aalamifar, Reza Seifabadi, Marcelino Bernardo, Ayele H.Negussie, Baris Turkbey, Maria Merino, Peter Pinto, Arman Rahmim, Bradford Wood, Emad Boctor

PS3 - 23 Photoacoustic Imaging Paradigm Shift: Towards Using Vendor-Independent Ultrasound Scanners
Haichong Zhang, Xiaoyu Guo, Behnoosh Tavakoli, Emad Boctor

PS3 - 24 4D Reconstruction of Fetal Heart Ultrasound Images in Presence of Fetal Motion
Christine Tanner, Barbara Flach, Celine Eggenberger, Oliver Mattausch, Michael Bajka, Orcun Goksel

PS3 - 25 Towards Reliable Automatic Characterization of Neonatal Hip Dysplasia using 3D Ultrasound
Niamul Quader, Antony Hodgson, Kishore Mulpuri, Anthony Cooper, Rafeef Abugharbieh

REG: Registration and Deformation Estimation

PS3 - 26 Learning-based Multimodal Image Registration for Prostate Cancer Radiation Therapy
Xiaohuan CaoYaozong Gao,Jianhua Yang, Guorong Wu, Dinggang Shen

PS3 - 27 A Deep Metric for Multimodal Registration
Martin Simonovsky, Benjamin Gutierrez-Becker, Diana Mateus, Nassir Navab, Nikos Komodakis

PS3 - 28 Learning Optimization Updates for Multimodal Registration
Benjamin Gutierrez Becker,Diana Mateus, Loic Peter,Nassir Navab

PS3 - 29 Memory Efficient LDDMM for Lung CT
Thomas Polzin, Marc Niethammer, Mattias Paul Heinrich, Heinz Handels, Jan Modersitzki

PS3 - 30 Inertial Demons: A Momentum-Based Diffeomorphic Registration Framework
Andre Santos-Ribeiro, David Nutt, John McGonigle

PS3 - 31 Diffeomorphic Density Registration in Thoracic Computed Tomography
Caleb Rottman, Ben Larson, Pouya Sabouri, Amit Sawant, Sarang Joshi

PS3 - 32 Temporal Registration in In-Utero Volumetric MRI Time Series
Ruizhi Liao, Esra Turk, Miaomiao Zhang, Jie Luo, Patricia Grant, Elfar Adalsteinsson, Polina Golland

PS3 - 33 Building an Atlas of the Human Hippocampus from Ex Vivo MRI using Hybrid Surface - Volume Groupwise Registration
Daniel Adler, Ranjit Ittyerah, John Pluta, Stephen Pickup, Weixia Liu, David Wolk, Paul Yushkevich

PS3 - 34 Deformation Estimation with Automatic Sliding Boundary Computation
Joseph Preston, Sarang Joshi, Ross Whitaker

PS3 - 35 Bilateral Weighted Adaptive Local Similarity Measure for Registration in Neurosurgery
Martin Kochan, Marc Modat, Tom Vercauteren, Mark White, Laura Mancini, Gavin Winston, Andrew W. McEvoy, John Thornton, Tarek Yousry, John Duncan, Sebastien Ourselin, Danail Stoyanov

PS3 - 36 Model-based Regularisation for Respiratory Motion Estimation with Sparse Features in Image-guided Interventions
Matthias Wilms, In Young Ha, Heinz Handels, Mattias Paul Heinrich

PS3 - 37 Carotid Artery Wall Motion Estimated from Ultrasound Imaging Sequences Using a Nonlinear State Space Approach
Zhifan Gao, Yuanyuan Sun, Heye Zhang, Dhanjoo Ghista, Yanjie Li, Huahua Xiong, Xin Liu, Yaoqin Xie, Wanqing Wu

PS3 - 38 Accuracy Estimation for Medical Image Registration Using Regression Forests
Hessam Sokooti Oskooyi, Gorkem Saygili, Ben Glocker, Boudewijn P.F.Lelieveldt,Marius Staring

PS3 - 39 Embedding Segmented Volume in Finite Element Mesh with Topology Preservation
Kazuya Sase, Teppei Tsujita, Atsushi Konno

PS3 - 40 Deformable 3D-2D Registration of Known Components for Image Guidance in Spine Surgery
Ali Uneri, Joseph Goerres, Tharindu De SilvaMatthew Jacobson, Michael Ketcha, Sureerat Reaungamornrat, Gerhard Kleinszig, Sebastian Vogt, A Jay Khanna, Jean-Paul Wolinsky, Jeffrey Siewerdsen

PS3 - 41 Anatomically Constrained Video-CT Registration via the V-IMLOP Algorithm
Seth D. Billings, Ayushi Sinha, Austin Reiter, Simon Leonard, Masaru Ishii, Gregory D. Hager, Russell H. Taylor

POSTER SESSIONS

CELL: Cell Image Analysis

PS3 - 42 Cutting Out The Middleman: Measuring Nuclear Area in Histopathology Slides Without Segmentation
Mtiko Veta, Paul van Diest, Josien Pluim

PS3 - 43 Subtype Cell Detection with an Accelerated Deep Convolution Neural Network
Sheng Wang, Jiawen Yao, Zheng Xu, Junzhou Huang

PS3 - 44 Clinical Imaging Biomarker Discovery for Lung Cancer Survival Prediction
Jiawen Yao, Sheng Wang, Xinliang Zhu, Junzhou Huang

PS3 - 45 3D Segmentation of Glial Cells Using Fully Convolutional Networks and k-Terminal Cut
Lin Yang, Yizhe Zhang, Ian Guldner, Siyuan Zhang, Danny Z. Chen

PS3 - 46 Detection of Differentiated vs. Undifferentiated Colonies of iPS Cells Using Random Forests Modeled with the Multivariate Polya Distribution
Bisser Raytchev, Atsuki Masuda, Masatoshi Minakawa, Kojiro Tanaka, Takio Kurita, Toru Imamura, Masashi Suzuki, Toru Tamaki, Kazufumi Kaneda

PS3 - 47 Detecting 10,000 Cells in One Second
Zheng Xu, Junzhou Huang

PS3 - 48 A Hierarchical Convolutional Neural Network for Mitosis Detection in Phase-Contrast Microscopy Images
Yunxiang Mao, Zhaozheng Yin

16:00 - 17:30 Poster Session 4

AD: Alzheimers Disease

PS4 - 1 **Early Diagnosis of Alzheimers Disease by Joint Feature Selection and Classification on Temporally Structured Support Vector Machine**
Yingying zhu, Xiaofeng zhu, Minjeong Kim, Dinggang Shen, Guorong Wu

PS4 - 2 **Longitudinal Structured Low-Rank Regression for Alzheimers Disease Progression Prediction**
Xiaoqian Wang, Dinggang Shen, Heng Huang

PS4 - 3 **Joint Data Harmonization and Group Cardinality Constrained Classification**
Yong Zhang, Sang Hyun Park, Kilian Pohl

PS4 - 4 **Progressive Graph-Based Transductive Learning for Multi-Modal Classification of Alzheimers Disease**
Zhengxia Wang, Xiaofeng Zhu, Ehsan Adeli, Yingying Zhu, Chen Zu, Feiping NieDinggang Shen, Guorong Wu

PS4 - 5 **Structured Outlier Detection in Neuroimaging Studies With Minimal Convex Polytopes**
Erdem Varol, Aristeidis Sotiras, Christos Davatzikos

PS4 - 6 **Diagnosis of Alzheimers Disease Using View-Aligned Hypergraph Learning with Incomplete Multi-Modality Data**
Mingxia Liu, Jun Zhang, Pew-Thian Yap, Dinggang Shen

PS4 - 7 **New Low-Rank Model to Learn Task Interrelations for Alzheimers Disease Cognitive Assessment Prediction**
Zhouyuan Huo, Dinggang Shen, Heng Huang

PS4 - 8 **Hyperbolic Space Sparse Coding with Its Application on Prediction of Alzheimers Disease in Mild Cognitive Impairment**
Jie Zhang, Jie Shi, Cynthia Stonnington, Qingyang Li, Boris Gutman, Kewei Chen, Eric Reiman, Richard Caselli, Paul Thompson, Jieping Ye, Yalin Wang

PS4 - 9 **Large-scale Collaborative Imaging Genetics Studies of Risk Genetic Factors for Alzheimers Disease Across Multiple Institutions**
Qingyang Li, Tao Yang, Liang Zhan, Derrek Hibar, Neda Jahanshad, Yalin Wang, Jieping Ye, Paul Thompson, Jie Wang

PS4 - 10 **Structured Spare Low-Rank Regression Model for Brain-Wide and Genome-Wide Associations**
Xiaofeng Zhu, Heung-Il Suk, Heng Huang, Dinggang Shen

POSTER SESSIONS

S1: Segmentation 1

PS4 - 11 Automated Segmentation of Knee MRI using Hierarchical Classifiers and Just Enough Interaction (JEI) based Learning: Data from the Osteoarthritis Initiative
Satyananda Kashyap, Ipek Oguz, Honghai Zhang, Milan Sonka

PS4 - 12 Dynamically Balanced Online Random Forests for Interactive Scribble-based Segmentation
Guotai Wang, Maria A. Zuluaga, Rosalind Pratt, Michael Aertsen, Tom Doel, Maria Klusmann, Anna David, Jan Deprest, Tom Vercauteren, Sebastien Ourselin

PS4 - 13 Orientation-Sensitive Overlap Measures For The Validation of Medical Image Segmentations
Tasos Papastylianou, Erica Dall' Armellina, Vicente Grau

PS4 - 14 High-Throughput Glomeruli Analysis of CT Kidney Images Using Tree Priors and Scalable Sparse Computation
Carlos Correa Shokiche, Philipp Baumann, Ruslan Hlushchuk, Valentin Djonov, Mauricio Reyes

PS4 - 15 A Surface Patch-Based Segmentation Method for Hippocampal Subfields
Benoit Caldairou, Boris C. Bernhardt, Hosung Kim, Jessie Kulaga-Yoskovitz, Neda Bernasconi, Andrea Bernasconi

PS4 - 16 Evaluation-Oriented Training Through Surrogate Learning Targets for Improved Multiple Sclerosis Lesion Segmentation
Michel Santos, Paula Diniz, Abel Silva-Filho, Wellington Santos

PS4 - 17 Corpus Callosum Segmentation in Brain MRIs Via Robust Target-Localization and Joint Supervised Feature Extraction and Prediction
Lisa Tang, Tom Brosch, Liu XingTong, Youngjin Yoo, Traboulsee Anthony, David Li, Roger Tam

PS4 - 18 Automatic Liver and Lesion Segmentation in CT Using Cascaded Fully Convolutional Neural Networks and 3D Conditional Random Fields
Patrick Ferdinand Christ,Mohamed Ezzeldin A. Elshaer, Florian Ettlinger, Sunil Ramgopal Tatavatry, Marc Bickel, Patrick Bilic, Markus Rempfler, Marco Armbruster, Felix Hofmann, Melvin D'Anastasi, Wieland Sommer, Seyed-Ahmad Ahmadi, Bjoern Menze

PS4 - 19 3D U-Net: Learning Dense Volumetric Segmentation From Sparse Annotation
Özgün Çiçek, Ahmed Abdulkadir, Soeren Lienkamp, Thomas Brox, Olaf Ronneberger

PS4 - 20 Model-Based Segmentation of Vertebral Bodies from MR Images with 3D CNNs
Robert Korez, Bostjan Likar, Franjo Pernus, Tomaz Vrtovec

PS4 - 21 **Pancreas Segmentation using Graph based Data Fusion with Convolutional Neural Networks**
Jinzheng Cai, Le Lu, Zizhao Zhang, Fuyong Xing,Lin Yang, Qian Yin

PS4 - 22 **Spatial Aggregation of Holistically-Nested Networks for Automated Pancreas Segmentation**
Holger Roth, Le Lu, Amal Farag, Andrew Sohn, Ronald Summers

PS4 - 23 **Topology Aware Fully Convolutional Networks For Histology Gland Segmentation**
Aïcha BenTaieb, Ghassan Hamarneh

PS4 - 24 **HeMIS: Hetero-Modal Image Segmentation**
Mohammad Havaei, Nicolas Guizard, Nicolas Chapados, Yoshua Bengio

PS4 - 25 **Deep Learning for Multi-Task Medical Image Segmentation in Multiple Modalities**
Pim Moeskops, Jelmer M. Wolterink, Bas H.M. van der Velden, Kenneth G.A. Gilhuijs, Tim Leiner, Max A. Viergever, Ivana Isgum

PS4 - 26 **Iterative Multi-domain Regularized Deep Learning for Anatomical Structure Detection and Segmentation from Ultrasound Images**
Hao Chen, Yefeng Zheng, JinHyeong Park, Pheng Ann HENG, S. Kevin Zhou

PS4 - 27 **Gland Instance Segmentation by Deep Multichannel Side Supervision**
Yan xu, Yang li, Mingyuan liu, Yipei wang, Maode lai, Eric Chang

SM: Shape Modeling

PS4 - 28 **A Multi-Resolution t-Mixture Model Approach to Robust Group-wise Alignment of Shapes**
Nishant Ravikumar, Ali Gooya, Serkan Çimen, Alejandro Frangi, Zeike Taylor

PS4 - 29 **Quantifying Shape Deformations by Variation of Geometric Spectrum**
Hajar Hamidian, Jiaxi Hu, Zichun Zhong, Jing Hua

PS4 - 30 **Myocardial Segmentation of Contrast Echocardiograms Using Random Forests Guided by Shape Model**
Yuanwei Li, Chin Pang Ho, Navtej Chahal, Roxy Senior, Meng-Xing Tang

PS4 - 31 **Low-Dimensional Statistics of Anatomical Variability Via Compact Representation of Image Deformations**
Miaomiao Zhang, William (Sandy) Wells, Polina Golland

PS4 - 32 **A Multiscale Cardiac Model for Fast Personalisation and Exploitation**
Roch-Philippe Molléro,Xavier Pennec, Hervé Delingette, Nicholas Ayache, Maxime Sermesant

POSTER SESSIONS

PS4 - 33 Transfer Shape Priors Towards High-throughput Microscopy Image Segmentation
Fuyong Xing, Xiaoshuang Shi, Zizhao Zhang, Jinzheng Cai, Yuanpu Xie, Lin Yang

PS4 - 34 Hierarchical Generative Modeling and Monte-Carlo EM in Riemannian Shape Space for Hypothesis Testing
Saurabh Shigwan,Suyash Awate

PS4 - 35 Direct Estimation of Wall Shear Stress from Aneurysmal Morphology: A Statistical Approach
Ali Sarrami-Foroushani,Toni Lassila, Jose Maria Pozo, Ali Gooya, Alejandro Frangi

PS4 - 36 Multi-Task Shape Regression for General Medical Image Segmentation
Xiantong Zhen, Yilong Yin, Mousumi Bhaduri , Ilanit Ben Nachum, David Laidley, Shuo Li

PS4 - 37 Soft Multi-Organ Shape Models via Generalized PCA: A General Framework
Juan J. Cerrolaza, Ronald Summers, Marius George Linguraru

PS4 - 38 An Artificial Agent for Anatomical Landmark Detection
Florin-Cristian GhesuBogdan GeorgescuTommaso MansiDominik Neumann, Joachim Hornegger, Dorin Comaniciu

Thursday, October 20

10:30 - 12:00 Poster Session 5

MRI: MR Image Analysis

PS5 - 1 **Dynamic Volume Reconstruction from Multi-slice Abdominal MRI Using Manifold Alignment**
Xin Chen, Muhammad Usman, Daniel Balfour, Paul Marsden, Andrew Reader, Claudia Prieto, Andrew King

PS5 - 2 **Fast and Accurate Multi-Tissue Deconvolution Using SHORE and H-psd Tensors**
Michael Ankele, Lek-Heng Lim, Samuel Groeschel, Thomas Schultz

PS5 - 3 **Optimisation of Arterial Spin Labelling using Bayesian Experimental Design**
David Owen, Andrew Melbourne, David Thomas, Enrico De Vita, Jonathan Rohrer, Sebastien Ourselin

PS5 - 4 **4D Phase-Contrast Magnetic Resonance CardioAngiography (4D PC-MRCA) creation from 4D flow MRI**
Mariana Bustamante, Vikas Gupta, Carl-Johan Carlhäll, Tino Ebbers

PS5 - 5 **Joint Estimation of Cardiac Motion and T1 Maps for Magnetic Resonance Late Gadolinium Enhancement Imaging**
Jens Wetzl, Aurélien F. Stalder, Michaela Schmidt, Yigit H. Akgök, Christoph Tillmanns, Felix Lugauer, Christoph Forman, Joachim Hornegger, Andreas Maier

PS5 - 6 **Correction of Fat-Water Swaps in Dixon MRI**
Ben Glocker, Ender Konukoglu, Ioannis Lavdas, Juan Eugenio Iglesias, Eric O Aboagye, Andrea G Rockall, Daniel Rueckert

PS5 - 7 **Motion-Robust Reconstruction based on Simultaneous Multi-Slice Registration for Diffusion-Weighted MRI of Moving Subjects**
Bahram Marami, Benoit Scherrer, Onur Afacan, Simon Warfield, Ali Gholipour

PS5 - 8 **Self Super-resolution for Magnetic Resonance Images**
Amod Jog, Aaron Carass, Jerry Prince

PS5 - 9 **Tight Graph Framelets for Sparse Diffusion MRI q-Space Representation**
Pew-Thian Yap, Bin Dong, Yong Zhang, Dinggang Shen

PS5 - 10 **A Bayesian Model to Assess T2 Values and their Changes Over Time in Quantitative MRI**
Benoit Combès, Anne Kerbrat, Olivier Commowick, Christian Barillot

POSTER SESSIONS

PS5 - 11 Simultaneous Parameter Mapping, Modality Synthesis, and Anatomical Labeling of the Brain With MR Fingerprinting
Pedro Gómez, Miguel Molina Romero, Cagdas Ulas, Guido Bounincontri, Jonathan Sperl, Derek Jones, Marion Menzel, Bjoern Menze

PS5 - 12 XQ-NLM: Denoising Diffusion MRI Data via x-q Space Non-Local Patch Matching
Geng Chen, Yafeng Wu, Dinggang Shen, Pew-Thian Yap

PS5 - 13 Spatially Adaptive Spectral Denoising for MR Spectroscopic Imaging using Frequency-Phase Non-Local Means
Dhritiman Das, Eduardo Coello, Rolf Schulte, Bjoern Menze

PS5 - 14 Beyond the resolution limit: parameter estimation in partial volume
Zach Eaton-Rosen, Andrew Melbourne, M. Jorge Cardoso, Neil Marlow,Sebastien Ourselin

PS5 - 15 A Promising Non-invasive CAD System for Kidney Function Assessment
Mohamed Shehata, Fahmi Khalifa, Ahmed Soliman, Mohamed Abou El-Ghar, Amy Dwyer, Georgy Gimel'farb, Robert Keynton, Ayman El-Baz

PS5 - 16 Comprehensive Maximum Likelihood Estimation of Diffusion Compartment Models Towards Reliable Mapping of Brain Microstructure
Aymeric Stamm, Olivier Commowick, Simon Warfield, Simone Vantini

S2: Segmentation 2

PS5 - 17 Enhanced Probabilistic Label Fusion by Estimating Label Confidences through Discriminative Learning
Oualid M. Benkarim, Gemma Piella, Miguel A. González Ballester, Gerard Sanroma

PS5 - 18 Feature Sensitive Label Fusion with Random Walker for Atlas-based Image Segmentation
Siqi Bao, Albert C. S. Chung

PS5 - 19 Automatic Lymph Node Cluster Segmentation using Holistically-Nested Networks and Structured Optimization in CT Images
Isabella Nogues, Le Lu, Xiaosong Wang, Holger Roth, Gedas Bertasius, Nathan Lay, Jianbo Shi, Yohannes Tsehay, Ronald Summers

PS5 - 20 Deep Fusion Net for Multi-Atlas Segmentation: Application to Cardiac MR Images
Heran YANG, Jian Sun, Huibin Li, Lisheng Wang, Zongben Xu

PS5 - 21 Prior-based Coregistration and Cosegmentation
Mahsa Shakeri, Enzo Ferrante, Stavros Tsogkas, Sarah Lippé, Samuel Kadoury, Iasonas kokkinos, Nikos Paragios

PS5 - 22 Globally Optimal Label Fusion with Shape Priors
Ipek Oguz, Satyananda Kashyap, Hongzhi Wang, Paul Yushkevich, Milan Sonka

PS5 - 23 Joint Segmentation and CT Synthesis for MRI-only Radiotherapy Treatment Planning
Ninon Burgos, Filipa Guerreiro, Jamie McClelland, Simeon Nill, David Dearnaley, Nandita deSouza, Uwe Oelfke, Antje-Christin Knopf, Sebastien Ourselin, M. Jorge Cardoso

PS5 - 24 Regression Forest-based Atlas Localization and Direction Speci(cid:12)c Atlas Generation for Pancreas Segmentation
Masahiro Oda, Natsuki Shimizu, Kenichi Karasawa, Yukitaka Nimura, Takayuki Kitasaka, Kazunari Misawa, Michitaka Fujiwara, Daniel Rueckert, Kensaku Mori

PS5 - 25 Accounting for the Confound of Meninges in Segmenting Entorhinal and Perirhinal Cortices in T1-weighted MRI
Long Xie, Laura Wisse, Sandhitsu Das, Hongzhi wang, David Wolk, Jose V. Manjon, Paul Yushkevich

PS5 - 26 7T-Guided Learning Framework for Improving the Segmentation of 3T MR Images
Khosro Bahrami, Islem Rekik, Feng Shi, Yaozong Gao, Dinggang Shen

PS5 - 27 Multivariate Mixture Model for Cardiac Segmentation from Multi-Sequence MRI
Xiahai Zhuang

PS5 - 28 Fast Fully Automatic Segmentation of the Human Placenta from Motion Corrupted MRI
Amir Alansary, Konstantinos Kamnitsas, Alice Davidson, King's Rostislav Khlebnikov, Martin Rajchl, Christina Malamateniou, Mary Rutherford, Joseph Hajnal, Ben Glocker, Daniel Rueckert, Bernhard Kainz

PS5 - 29 Multi-Organ Segmentation using Vantage Point Forests and Binary Context Features
Mattias Paul Heinrich, Maximilian Blendowski

PS5 - 30 Multiple Object Segmentation and Tracking by Bayes Risk Minimization
Tomáš Sixta, Boris Flach

PS5 - 31 Crowd-algorithm collaboration for large-scale endoscopic image annotation with confidence
Lena Maier-Hein, Tobias Ross, Janek Gröhl, Ben Glocker, Sebastian Bodenstedt, Christian Stock, Eric Heim, Michael Goetz, Sebastian Wirkert, Hannes Götz Kenngott, Stefanie Speidel, Klaus Maier-hein

POSTER SESSIONS

PS5 - 32 Emphysema Quantification on Cardiac CT Scans Using Hidden Markov Measure Field Model: The MESA Lung Study
Jie Yang, Elsa Angelini, Pallavi Balte, Eric Hoffman, Colin Wu, Bharath Venkatesh, R. Graham Barr, Andrew Laine

RECON: Reconstruction

PS5 - 33 ASL-incorporated Pharmacokinetic Modelling of PET Data with Reduced Acquisition Time: Application to Amyloid Imaging
Catherine Scott, Jieqing Jiao, Andrew Melbourne, Jonathan Schott, Brian Hutton, Sebastien Ourselin

PS5 - 34 Probe-based Rapid Hybrid Hyperspectral and Tissue Surface Imaging Aided by Fully Convolutional Networks
Jianyu Lin, Neil T. Clancy, Xueqing Sun, Ji Qi, Mirek Janatka, Danail Stoyanov, Daniel S. Elson

PS5 - 35 Efficient Low-Dose CT Denoising by Locally-Consistent Non-Local Means (LC-NLM)
Michael Green, Edith Marom, Nahum Kiryati, Eli Konen, Arnaldo Mayer

PS5 - 36 Deep Learning Computed Tomography
Tobias Würfl,Florin Ghesu, Vincent Christlein, Andreas Maier

PS5 - 37 Axial Alignment for Anterior Segment Swept Source Optical Coherence Tomography via Robust Low-rank Tensor Recovery
Yanwu Xu, Lixin Duan, Huazhu Fu, Xiaoqin Zhang, Damon W.K. Wong, Baskaran Mani, Tin Aung, Jiang Liu

PS5 - 38 3D Imaging from Video and Planar Radiography
Julien Pansiot, Edmond Boyer

PS5 - 39 Semantic Reconstruction-based Nuclear Cataract Grading from Slit-lamp Lens Images
Yanwu Xu, Lixin Duan, Damon W.K. Wong, Tien Yin Wong, Jiang Liu

PS5 - 40 Vessel Orientation Constrained Quantitative Susceptibility Mapping (QSM) Reconstruction
Suheyla Cetin, Berkin Bilgic, Audrey Fan, Samantha Holdsworth, Gozde Unal

PS5 - 41 Spatial-Angular Sparse Coding for HARDI
Evan Schwab, Rene Vidal, Nicolas Charon

PS5 - 42 Compressed Sensing Dynamic MRI Reconstruction using GPU-accelerated 3D Convolutional Sparse Coding
Tran Minh Quan, Won-Ki Jeong

CIA: Cancer Image Analysis

PS5 - 43 Image-based Computer-Aided Diagnostic System for Early Diagnosis of Prostate Cancer
Islam Reda, Ahmed Shalaby, Mohammed Elmogy, Ahmed AbouElfotouh, Fahmi Khalifa, Mohamed Abou El-Ghar, Georgy Gimel'farb, Ayman El-Baz

PS5 - 44 Multidimensional Texture Analysis for Improved Prediction of Ultrasound Liver Tumor Response to Chemotherapy Treatment
Omar Al-Kadi,Dimitri Van de ville, Adrien Depeursinge

PS5 - 45 Classification of Prostate Cancer Grades and T-Stages based on Tissue Elasticity Using Medical Image Analysis
Shan Yang, Vladimir Jojic, Jun Lian, Ronald Chen, Hongtu Zhu, Ming Lin

PS5 - 46 Automatic Determination of Hormone Receptor Status in Breast Cancer using Thermography
Siva Teja Kakileti, Krithika Venkataramani, Himanshu Madhu

PS5 - 47 Prostate Cancer: Improved Tissue Characterization by Temporal Modeling of Radio-Frequency Ultrasound Echo Data
Layan Nahlawi, Farhad Imani, Mena Gaed, Jose A. Gomez, Madeleine Moussa, Eli Gibson, Aaron Fenster, Aaron Ward, Purang Abolmaesumi, Hagit Shatkay, Parvin Mousavi

PS5 - 48 Classifying Cancer Grades Using Temporal Ultrasound for Transrectal Prostate Biopsy
Shekoofeh Azizi, Farhad Imani, Jin Tae Kwak, Amir Tahmasebi, Sheng Xu, Pingkun Yan, Jochen Kruecker, Baris Turkbey, Peter Choyke, Peter Pinto, Bradford Wood, Parvin Mousavi, Purang Abolmaesum

PS5 - 49 Characterization of Lung Nodule Malignancy using Hybrid Shape and Appearance Features
Mario Buty, Ziyue Xu, Mingchen Gao, Ulas Bagci, Aaron Wu, Daniel J. Mollur

17 OCTOBER SATELLITE EVENTS OVERVIEW

FULL DAY : 09:00 – 18:00
AM : 09:00 – 13:00
PM : 14:00 – 18:00

(W)CBM: Computational Biomechanics of Medicine XI Workshop / page: 50
FULL DAY – Theta Meeting Room

(W)MLMI: Workshop on Machine Learning in Medical Imaging / page: 52
FULL DAY – Ypsilon 1-2-3

(W)IMIC: Workshop on Interactive Medical Image Computing / page: 56
FULL DAY – Ypsilon 4-5

(W)CLIP: Workshop on Clinical Image-based Procedures / page: 58
FULL DAY – Delta Meeting Room

(CW)CVII-STENT: Workshop and Challenge on Computing and Visualisation for Intravascular Imaging and Computer Assisted Stenting / page: 59
FULL DAY – Lambda Meeting Room

(CW)BRAINLES: Brain Lesion Workshop and Challenges on Brain Tumor and Stroke Lesion Analysis, Traumatic Brain Injury / page: 60
FULL DAY – Omega Meeting Room

(CW)CSI: Workshop & Challenge On Computational Methods and Clinical Applications for Spine Imaging / page: 62
FULL DAY – Omikron I Meeting Room

(CW)STACOM: Workshop on Statistical Atlases and Computational Models of the Heart / page: 63
FULL DAY – VIP Meeting Room

(W)CARE: Workshop on Computer-Assisted and Robotic Endoscopy / page: 67
FULL DAY – Athenaeum CC II-III Meeting Room

(T)PAI: Photoacoustic Imaging: State-of-the-art, Image Reconstruction, and Clinical Translation / page: 76
AM – Athenaeum CC I Meeting Room

(W)RAMBO: Workshop on Reconstruction and Analysis of Moving Body Organs / page: 69
AM – Epsilon/Zeta Meeting Room

(W)PATCHMI: Workshop on Patch-based Techniques in Medical Imaging / page: 70
AM – Omikron II Meeting Room

17 OCTOBER SATELLITE EVENTS OVERVIEW

(W)BACON: Workshop on Brain Analysis using Connectivity Networks / page: 72
AM – Alpha/Beta Meeting Room

(W)ML-CDS: Workshop on Multimodal Learning for Clinical Decision Support / page: 73
PM – Sigma Meeting Room

(CW)HVSMR: Workshop & Challenge on Whole-heart and Great Vessel Segmentation from 3D Cardiovascular MRI in Congenital Heart Disease / page: 74
PM – Athenaeum CC I Meeting Room

(C)TUPAC: Tumor Proliferation Assessment Challenge / page: 75
PM – Epsilon/Zeta Meeting Room

(C)CREMI: Challenge on Circuit Reconstruction from Electron Microscopy / page: 75
PM – Omikron II Meeting Room

(T)AFMRI: Tutorial on Advances in fMRI / page: 76
PM – Alpha/Beta Meeting Room

17 OCTOBER SATELLITE EVENTS

Disclaimer: The daily schedules were prepared by each event's organizers individually. The program below is the most recent version at the time of the publication of this booklet and might have undergone minor revisions since then. The participants are advised to check the website for most recent programs of each event.

WORKSHOPS

CBM: Computational Biomechanics of Medicine XI Workshop

09:00 Welcome and Opening Remarks
Karol Miller, The University of Western Australia

Oral Session 1 - Computational Biomechanics of the Heart, Vascular System, Internal Organs and Cells

09:10 **Invited Talk 1** - A Multi-Level Model for the Prediction of Atherosclerotic Plaque Progression
Dimitrios I. Fotiadis and Antonis Sakellarios and Themis Exarchos and Lambros K. Michalis, University of Ioannina

10:00 Reduced Order Model Of A Human Left And Right Ventricle Based On POD Method
Piotr Przybyła, Witold Stankiewicz, Marek Morzyński, Michał Nowak, Dominik Gaweł, Sebastian Stefaniak, Marek Jemielity

10:30 **Coffee Break**

Oral Session 2 - Computational Biomechanics of the Heart, Vascular System, Internal Organs and Cells

11:00 Motion Estimation With Finite-Element Biomechanical Models And Tracking Constraints From Tagged MRI
Arnold David Gomez, Fangxu Xing, Deva Chan, Dzung L. Pham, Philip Bayly , Jerry L. Prince

11:30 Estimation Of The Permeability Tensor Of The Microvasculature Of The Liver Through Fabric Tensors
Rodrigo Moreno, Patrick Segers, Charlotte Debbaut

12:00 Three-Dimensional Glenohumeral Joint Kinematic Analyses From Asynchronous Biplane Fluoroscopy Using An Interpolation Technique
Mohsen Akbari-Shandiz, Joseph D. Mozingo, David R. Holmes III, Kristin D. Zhao

12:30 Quantifying Cytoskeletal Morphology In Endothelial Cells To Enable Mechanical Analysis
Yi Chung Lim, Detlef Kuhl, Michael T. Cooling, David S. Long

13:00 **Lunch**

14:00 **Poster Session**

Computational Biomechanics Of The Heart, Vascular System, Internal Organs And Cells Constitutive Modelling Of Lamb Aorta
Ryley A. Macrae, Jane Pillow, Karol Miller, Barry J. Doyle

The Effects Of Geometric Variation From OCT-Derived 3D Reconstructions On Wall Shear Stress In A Patient-Specific Coronary Artery
Lachlan J. Kelsey, Carl Schultz, Karol Miller, Barry J. Doyle

Computational Biomechanics For Medical Image Registration, Soft Tissue Biomechanics, Tissue Damage And Injury Biomechanics Registration Of Prone And Supine Breast MRI For Breast Cancer Treatment Planning
Thiranja P. Babarenda Gamage , Habib Y. Baluwala, Martyn P. Nash, Poul M.F. Nielsen

Computation of Brain Deformations due to Violent Impact: Quantitative Analysis of the Importance of the Choice of Boundary Conditions and Brain Tissue Constitutive Model
Fang Wang, Zhengyang Geng, Sudip Agrawal, Yong Han, Karol Miller, Adam Wittek

Abusive Head Trauma - Modelling The Adult Head To Predict Brain Deformations Under Mild Accelerations
Nikini T. Puhulwelle Gamage, Andrew K. Knutsen, Dzung L. Pham, Andrew J. Taberner, Martyn P. Nash, Poul M. F. Nielsen

Subpixel Measurement Of Living Skin Deformation Using Intrinsic Features
Amir Hajirassouliha, Andrew J. Taberner, Martyn P. Nash, Poul M. F. Nielsen

Oral Session 3 - Computational Biomechanics for Medical Image Registration, Soft Tissue Biomechanics, Tissue Damage and Injury Biomechanics

15:10 **Invited Talk 2** - Lower Leg Elastic Compression: From Device Interaction to Biomechanical Action
Pierre Badel, Stéphane Avril, Jérôme Molimard
Ecole Nationale Supérieure des Mines de Saint-Etienne

16.00 **Coffee Break**

17 OCTOBER SATELLITE EVENTS

Oral Session 4 - Computational Biomechanics for Medical Image Registration, Soft Tissue Biomechanics, Tissue Damage and Injury Biomechanics

16:30 An Evaluation Of Adaptive Biomechanical Non-Rigid Registration For Brain Glioma Resection Using Image-Guided Neurosurgery
Fotis Drakopoulos, Chengjun Yao, Yixun Liu, Nikos Chrisochoides

17:00 Evaluation Of Strains On Levator Ani Muscle: Damage Induced During Delivery For A Prediction Of Patient Risks
Olivier Mayeur, Estelle Jeanditguatier, Jean-Francois Witz, Pauline Lecomte - Grosbras, Michael Cosson, Chrystele Rubod, Mathias Brieu

17:30 CBM Best Paper Award And Closing Remarks
Karol Miller

MLMI: Workshop on Machine Learning in Medical Imaging

08:30 Registration, Speaker Check-in and Poster Setup

09:00 Welcome and Opening Remarks

09:15 **Invited Talk** - Industrialization Of AI For Healthcare - Breakthrough In Technology, Pragmatism In Design, And Scale-Up In Infrastructure
Xiang Sean Zhou, Siemens Healthcare

10:30 **Coffee Break**

11:00 **Oral Session 1**

Unsupervised Discovery Of Emphysema Subtypes In A Large Clinical Cohort
Polina Biner, Nematollah Batmanghelich, Raul San José Estepar, Polina Golland

Multi-Resolution-Tract CNN With Hybrid Pretrained And Skin-Lesion Trained Layers
Jeremy Kawahara, Ghassan Hamarneh, Aïcha Ben-Taieb

Retinal Image Quality Classification Using Saliency Maps And CNNs
Dwarikanath Mahapatra

Do We Need Large Annotated Training Data For Detection Applications In Biomedical Image Data? A Case Study In Renal Glomeruli Detection
Michael Gadermayr, RWTH Aachen; Barbara Klinkhammer, Klinikum Aachen; Peter Boor, Klinikum Aachen; Dorit Merhof, RWTH Aachen

Iterative Dual LDA: A Novel Classification Algorithm For Resting State fMRI
Zobair Arya, Ludovica Griffanti, Clare Mackay, Mark Jenkinson

Learning Global And Cluster-Specific Classifiers For Robust Brain Extraction In MR Data
Yuan Liu, Hasan Cetingul, Benjamin Odry, Mariappan Nadar

13:00 **Lunch and Poster Session**

Identifying High Order Brain Connectome Biomarkers Via Learning On Hypergraph
Chen Zu, Gao Yue, Brent Munsell, Minjeong Kim, Ziwen Peng, Yingying Zhu, Wei Gao, Daoqiang Zhang, Dinggang Shen, Guorong Wu

Fast Neuroimaging-Based Retrieval For Alzheimer's Disease Analysis
Xiaofeng Zhu, Kim-Han Thung, Dinggang Shen

Detecting Osteophytes In Radiographs Of The Knee To Diagnose Osteoarthritis
Jessie Thomson, Tim Cootes, David Felson, Terence O'Neill

Dual-Layer Groupwise Registration For Consistent Labeling Of Longitudinal Brain Images
Minjeong Kim, Guorong Wu, Islem Rekik, Dinggang Shen

Joint Discriminative And Representative Feature Selection For Alzheimer's Disease Diagnosis
Xiaofeng Zhu, Heungil Suk, Kim Han Thung, Yingying Zhu, Guorong Wu, Dinggang Shen

Patch-Based Hippocampus Segmentation Using A Local Subspace Learning Method
Yan Wang, Guangkai Ma, Jiliu Zhou, Xi Wu, Zongqing Ma, Ying Fu

Improving Single-Modal Neuroimaging Based Diagnosis Of Brain Disorders Via Boosted Privileged Information Learning Framework
Xiao Zheng, Jun Shi, Shihui Ying, Qi Zhang, Yan Li

Deep Ensemble Sparse Regression Network For Alzheimer's Disease Diagnosis
Heung-Il Suk, Dinggang Shen

Learning Representation For Histopathological Image With Quaternion Grassmann Average Network
Jinjie Wu, Jun Shi, Shihui Ying, Qi Zhang, Yan Li

Segmentation Of Perivascular Spaces Using Vascular Features And Structured Random Forest From 7T MR Image
Jun Zhang, Yaozong Gao, Sanghyun Park, Xiaopeng Zong, Weili Lin, Dinggang Shen

17 OCTOBER SATELLITE EVENTS

Multi-Label Deep Regression And Unordered Pooling For Holistic Interstitial Lung Disease Detection
Mingchen Gao, Ziyue Xu, Le Lu, Adam Harrison, Ronald Summers, Daniel Mollura

Learning Appearance And Shape Evolution For Infant Image Registration In The First Year Of Life
Lifang Wei, Shunbo Hu, Yaozong Gao, Xiaohuan Cao, Guorong Wu, Dinggang Shen

Tree-Based Transforms For Privileged Learning
Mehdi Moradi, Soheil Hor, Tanveer Syeda-Mahmood

Learning For Graph-Based Sensorless Freehand 3D Ultrasound
Loïc Tetrel, Hacène Chebrek, Catherine Laporte

Learning-Based 3T Brain MRI Segmentation With Guidance From 7T MRI Labeling
Renping Yu, Minghui Deng, Pew-Thian Yap, Zhihui Wei, Li Wang, Dinggang Shen

Automatic Hippocampal Subfield Segmentation From 3T Multi-Modality Images
Zhengwang Wu, Yaozong Gao, Feng Shi, Valerie Jewells, Dinggang Shen

Functional Connectivity Network Fusion With Dynamic Thresholding For MCI Diagnosis
Xi Yang, Yan Jin, Xiaobo Chen, Han Zhang, Dinggang Shen

Sparse Coding Based Skin Lesion Segmentation Using Dynamic Rule-Based Refinement
Behzad Bozorgtabar, Mani Abedini, Rahil Garnavi

Tumor Lesion Segmentation From 3D PET Using A Machine Learning Driven Active Surface
Payam Ahmadvand, Nóirín Duggan, François Benard, Ghassan Hamarneh

Mitosis Detection In Intestinal Crypt Images With Hough Forest And Conditional Random Fields
Gerda Bortsova, Michael Sterr, Lichao Wang, Fausto Milletari, Nassir Navab, Anika Böttcher, Heiko Lickert, Fabian Theis, Tingying Peng

Comparison Of Multi-Resolution Analysis Patterns For Texture Classification Of Breast Tumors Based On DCE-MRI
Alexia Tzalavra, Evangelia Zacharaki, Nikolaos Tsiaparas, Kalliopi Dalakleidi, Fotios Constantinidis, Nikos Paragios, Konstantina Nikita

Novel Morphological Features For Non-Mass-Like Breast Lesion Classification On DCE-MRI
Mohammad Razavi, Lei Wang, Tao Tan, Nico Karssemeijer, Lars Linsen, Udo Frese, Horst Hahn, Gabriel Zachmann

Regression Guided Deformable Models For Segmentation Of Multiple Brain ROIs
Zhengwang Wu, Sanghyun Park, Yanrong Guo, Yaozong Gao, Dinggang Shen

14:00 **Oral Session 2**

Bilateral Regularization In Reproducing Kernel Hilbert Spaces For Discontinuity Preserving Image Registration
Christoph Jud, Nadia Möri, Benedikt Bitterli, Philippe Cattin

Semi-Supervised Large Margin Algorithm For White Matter Hyperintensity Segmentation
Chen Qin, Ricardo Guerrero, Christian Ledig, Christopher Bowles, Philip Scheltens, Frederik Barkhof, Hanneke Rhodius-Meester, Betty Tijms, Afina Lemstra, Wiesje Van Der Flier, Ben Glocker, Daniel Rueckert

Structure Fusion For Automatic Segmentation Of Left Atrial Aneurysm Based On Deep Residual Networks
Liansheng Wang

Automated 3D Ultrasound Biometry Planes Extraction For First Trimester Fetal Assessment
Hosuk Ryou, Mohammad Yaqub, Angelo Cavallaro, Fenella Roseman, Aris Papageorghiou, Alison Noble

Segmentation-Free Estimation Of Kidney Volumes In CT With Dual Regression Forests
Mohammad Arafat Hussain, Ghassan Hamarneh, Timothy O'Connell, Mohammed Mohammed, Rafeef Abugharbieh

16:00 **Coffee Break**

16:30 **Oral Session 3**

Direct Estimation Of Fiber Orientations Using Deep Learning In Diffusion Imaging
Simon Koppers, Dorit Merhof

Cross-Modality Anatomical Landmark Detection Using Histograms Of Unsigned Gradient Orientations And Atlas Location Autocontext
Alison O'Neil, Mohammad Dabbah, Ian Poole

17 OCTOBER SATELLITE EVENTS

Transductive Maximum Margin Classification Of ADHD Using Resting State fMRI
Lei Wang, Danping Li, Tiancheng He, Stephen T. Wong, Zhong Xue

Building An Ensemble Of Complementary Segmentation Methods By Exploiting Probabilistic Estimates
Gerard Sanroma, Oualid Benkarim, Gemma Piella, Miguel Ángel *González Ballester*

18:00 Closing Remarks and Best Paper Award

IMIC: Workshop on Interactive Medical Image Computing

09:00 Welcome and Opening Remarks

09:05 **Invited Talk 1 -**
Tina Kapur, Harvard Medical School

Oral Session 1

09:45 Mixing Crowd And Algorithm Efforts To Segment Objects In Biomedical Images.
Danna Gurari, Mehrnoosh Sameki, Zheng Wu, Margrit Betke

10:00 FastDRaW - Fast Delineation By Random Walker: Application To Large Images.
Houssem-Eddine Gueziri, Lina Lakhdar, Michael Mcguffin, Catherine Laporte

10:15 Intuitive And Accurate Patient-Specific Coronary Tree Modeling From Cardiac Computed-Tomography Angiography.
Michael Wels, Félix Lades, Christian Hopfgartner, Chris Schwemmer, Michael Suehling

10:30 **Coffee Break**

11:00 **Demo Session 1**

12:00 **Invited Talk 2** - Mass Spectrometry For Image-Guided Surgery
Natalie Agar, Harvard Medical School

Oral Session 2

12:30 Highly Modular Multi-Platform Development Environment For Automated Segmentation And Just Enough Interaction.
Honghai Zhang, Satyananda Kashyap, Andreas Wahle, Milan Sonka

12:45 PRISM: An Open Source Framework For The Interactive Design Of GPU Volume Rendering Shaders
Simon Drouin, Louis Collins

13:00 **Lunch**

14:00 **Invited Talk 3** - Segmentation uncertainty and error estimation without ground truth: a framework
Leo Joskowicz, The Hebrew University of Jerusalem

Oral Session 3

14:30 Just-Enough Interaction Approach To Knee MRI Segmentation: Data From The Osteoarthritis Initiative
Satyananda Kashyap, Honghai Zhang, Milan Sonka

14:45 Interactive Tracking Of Cells In Microscopy Image Sequences
Mattia Gentil, Mehrnoosh Sameki, Danna Gurari, Elham Saraee, Erik Hasenberg, Joyce Y. Wong, Margrit Betke

15:00 iVR: A User Steerable And Interactive Direct Volume Rendering
Cheng Chang, Yi Gao

15:15 A Software Application For Interactive Medical Image Segmentation With Active User Guidance
Jens Petersen, Martin Bendszus, Jürgen Debus, Sabine Heiland, Klaus H. Maier-Hein

15:30 Cervical Range Of Motion Measurement Using MARG Low-Cost Sensors
David García-Mato, Eugenio Marinetto, Rocío López, Mónica García-Sevilla, Manuel Desco, Javier Pascau

15:45 Smart Brush For Tumor Segmentation By Boundary Detection Using Local Intensity Information.
Ka Hei Lok, Lin Shi, Defang Wang, Xian Lun Zhu

16:00 **Coffee Break**

16:30 **Demo Session 2**

17:15 Online voting for demos

17:25 Closing Remarks and announcement of Award Winner

17 OCTOBER SATELLITE EVENTS

CLIP: Workshop on Clinical Image-based Procedures

09:00 Welcome and Opening Remarks

09:15 **Invited Talk 1** - Transrectal Ultrasound (TRUS), SW Elastography And TRUS/MRI Fusion Guided Biopsy For Prostate Cancer
Pavlos Zoumpoulis, Diagnostic Echotomography SA

10:15 **Coffee Break**

11:00 **Oral Session 1**

11:00 An Automatic Free Fluid Detection For Morrison's-Pouch
Matthias Noll, Stefan Wesarg

11:20 Towards A Statistical Shape-Aware Deformable Contour Model For Cranial Nerve Identification
Sharmin Sultana, Michel Audette, Praful Agrawal, Shireen Elhabian, Ross Whitaker, Tanweer Rashid, Jason Blatt

11:40 Detection Of Wrist Fractures In X-Ray Images
Raja Ebsim, Jawad Naqvi, Tim Cootes

12:00 Validation Of An Improved Patient-Specific Mold Design For Registration Of In-Vivo MRI And Histology Of The Prostate
An Elen, Sofie Isebaert, Frederik De Keyzer, Uwe Himmelreich, Steven Joniau, Lorenzo Tosco, Wouter Everaerts, Tom Dresselaers, Evelyne Lerut, Raymond Oyen, Roger Bourne, Frederik Maes, Karin Haustermans

12:20 Personalized Optimal Planning For The Surgical Correction Of Metopic Craniosynostosis
Antonio R. Porras, Dženan Zukić, Andinet Equobahrie, Gary F. Rogers, Marius George Linguraru

12:40 Stable Anatomical Structure Tracking For Video-Bronchoscopy Navigation
Antonio Esteban Lansaque, Debora Gil, Carles Sanchez, Agnés Borràs, Antoni Rosell, Marta Diez-Ferrer

13:00 **Lunch / Best paper voting**

14:00 **Invited Talk 2**- From Ideas To Companies: Everything You Ever Wanted To Know
Georgios Sakas, National Technical University of Athens

15:00 **Oral Session 2**

15:00 Fast, Intuitive, Vision-Based: Performance Metrics For Visual Registration, Instrument Guidance, And Image Fusion
Ehsan Basafa, Martin Hoßbach, Philipp Stolka

15:20 Uncertainty Quantification Of Cochlear Implant Insertion From CT Images
Thomas Demarcy, Clair Vandersteen, Charles Raffaelli, Dan Gnansia, Nicolas Guevara, Nicholas Ayache, Hervé Delingette

15:40 Geodesic Registration For Cervical Cancer Radiotherapy
Sharmili Roy, John Totman, Joseph Ng, Jeffrey Low, Bok Choo

16:00 **Coffee Break**

16:30 Closing Remarks and Best Paper Awards

CVII-STENT: Workshop and Challenge on Computing and Visualisation for Intravascular Imaging and Computer Assisted Stenting

09:30 Welcome and Opening Remarks

10:00 Poster Teasers

10:30 **Coffee Break and Poster Session**

11:00 **Oral Session 1**

Invited Talk 1 - Vessel Modelling For Disease Prediction
Bjoern Menze, TU Munich

Invited Talk 2 - Interventional Assessment Of Hemodynamics
Markus Kowarschik, Siemens Healthcare

12:30 **Oral Session 1**

13:00 **Lunch**

14:00 **Invited Talk 3** - Computational Fluid Dynamics & Virtual Stenting
Gabor Janiga, Otto-von-Guericke-Universität Magdeburg

15:00 **Oral Session 2**

16:00 **Coffee Break and Poster Session**

16:30 **Oral Session 3**

17:30 Closing Remarks

17 OCTOBER SATELLITE EVENTS

BRAINLES: Brain Lesion Workshop and Challenges on Brain Tumor and Stroke Lesion Analysis, Traumatic Brain Injury

Oral Session 1 - Workshop I

08:30 Welcome and Opening Remarks
A. Crimi

08:40 Multi-Modal Registration Improves Group Discrimination In Pediatric Traumatic Brain Injury
E. Dennis et al.

08:50 A Fast Approach To Automatic Detection Of Brain Lesions
S. Koley et al.

09:00 An Online Platform For The Automatic Reporting Of Multiparametric Tissue Signatures: A Case Study In Glioblastoma
J.J. Albarracine et al.

09:10 **Invited Talk 1** - Multiple Sclerosis From Analysis To Data Management
Christian Barillot, INRIA

Oral Session 2 - mTOP : Mild Traumatic Brain Injury Outcome Prediction

09:30 Welcome and Opening Remarks

09:35 Presentation of contributed papers - mTOP

10:05 Presentation of Results, Awards

10:30 **Coffee Break**

Oral Session 3 - ISLES : Ischemic Stroke Lesion Segmentation Challenge

11:00 Welcome and Opening Remarks

11:05 **Invited Talk 2** - Advanced Neuroimaging For Stroke
Roland Wiest, University of Bern

11:25 Presentation of contributed papers - ISLES

11:55 Presentation of Results, Awards

12:20 ISLES summary & discussion

13:00 **Lunch and Poster Session** (Workshop and all challenges)

Oral Session 4 - BRATS : Multimodal Brain Tumor Segmentation Challenge

14:00 Welcome, Presentation of Results, Awards and Discussion

15:30 **Invited Talk 3** - Glioma, Neurosurgery And Beyond
George Stranjalis, University of Athens

15:50 **Invited Talk 4** - Multiple Sclerosis Segmentation
Koen Van Leemput, Harvard Medical School

16:10 **Coffee Break**

Oral Session 5 - Workshop II

16:40 **Invited Talk 5** - Advanced Approached Of Neurosonography
Alison Noble, University of Oxford

17:00 Topological Measures Of Connectomics For Low Grades Glioma
B. Amoah, A. Crimi

17:10 Fully Automated Patch-Based Image Restoration: Application To Pathology Inpainting
F. Prados et al.

17:20 Towards A Second Brain Images Of Tumors For Evaluation (BITE2) Database
I. Gerard et al.

17:30 General discussion

17:30 Final workshop and challenge discussion with organizers & speakers

17:55 Adjourn

17 OCTOBER SATELLITE EVENTS

CSI: Workshop & Challenge On Computational Methods and Clinical Applications for Spine Imaging

09:00 Welcome and Opening Remarks

Oral Session 1 - Segmentation

09:10 Improving An Active Shape Model With Random Classification Forest For Segmentation Of Cervical Vertebrae
S M Masudur Rahman Al Arif, Michael Gundry, Karen Knapp, Greg Slabaugh

09:30 Machine Learning Based Bone Segmentation In Ultrasound
Nora Baka, Sieger Leenstra, And *Theo Van Walsum*

09:50 Variational Segmentation Of The White And Gray Matter In The Spinal Cord Using A Shape Prior
Antal Horath, Simon Pezold, Matthias Weigel, Katrin Weier, Oliver Bieri, Philippe Cattin

10:10 Automated Intervertebral Disc Segmentation Using Deep Convolutional Neural Network
Xing Ji, Guoyan Zheng, Daniel Belavy, Dong Ni

10:30 **Coffee Break**

11:00 **Invited Talk 1** - Systems For Locating Vertebral Fractures In X-Ray Images
Tim Cootes, University of Manchester

Oral Session 2 - Localization

12:00 Fully Automatic Localization Of Vertebrae In CT Images Using Random Forest Regression Voting
Paul A. Bromiley, Eleni P. Kariki, Judith E. Adams, Timothy F. Cootes

12:20 Global Localization And Orientation Of The Cervical Spine In X-Ray Images
S M Masudur Rahman Al Arif, Michael Gundry, Karen Knapp, Greg Slabaugh

12:40 Accurate Intervertebral Disc Localization And Segmentation In MRI Using Vantage Point Hough Forests And Multi-Atlas Fusion
Mattias P. Heinrich, Ozan Okta

13:00 **Lunch**

14:00 **Invited Talk 2** - Review Of 3D/2D Registration For Image-Guided Intervention
Franjo Pernuš, University of Ljubljana

Oral Session 3 - Computer Aided Diagnosis and Intervention

15:00 Manual And Computer-Assisted Pedicle Screw Placement Plans: A Quantitative Comparison
Dejan Knez, Janez Mohar, Robert J. Cirman, Bostjan Likar, Franjo Pernus, Tomaz Vrtovec

15:15 Detection Of Degenerative Osteophytes Of The Spine On PET/CT Using Region-Based Convolutional Neural Networks
Yinong Wang, Jianhua Yao, Joseph E. Burns, Jiamin Liu, Ronald M. Summers

15:30 Classification Of Progressive And Non-Progressive Scoliosis Patients Using Discriminant Manifolds
William Mandel, Robert Korez, Marie-Lyne Nault, Stefan Parent, Samuelkadoury

15:45 Reconstruction Of 3D Lumbar Vertebral From Two X-Ray Images Based On 2D/3D Registration
Longwei Fang, Zuowei Wang, Zhiqiang Chen, Fengzeng Jian, Huiguang He

16:00 **Coffee Break**

16:30 Challenge Presentation and Report

17:50 Closing Remarks

STACOM: Workshop on Statistical Atlases and Computational Models of the Heart

08:30 Registration, Welcome and Opening Remarks

09:00 **Invited Talk 1** - Cardiovascular Magnetic Resonance. Current Status And Future Applications
Sophie Mavrogeni, Onassis Cardiac Surgery Center

10:00 Poster teasers from regular papers

10:30 **Coffee Break**

Oral Session 1 - SLAWT (Segmentation of Left Atrial Wall Thickness)

11:00 Clinical Insights Into Left Atrial Wall Thickness And Its Importance In Radio-Frequency Ablation
Pranav Bhagirath

11:10 The Challenge Image Database
Rashed Karim

17 OCTOBER SATELLITE EVENTS

11:15 Left Atrial Wall Segmentation And Thickness Measurement Using Region Growing And Marker-Controlled Geodesic Active Contour
Shuman Jia

11:25 Left Atrial Wall Segmentation Using Clinically Correlated Metrics
Jiro Inoue

11:40 Automatic Left Atrial Wall Segmentation From Contrast- Enhanced CT Angiography Images
Qian Tao

11:50 Challenge Results And Closing Remarks
Rashed Karim

12:00 **Poster Session**

Correction Of Slice Misalignment In Multi-Breath-Hold Cardiac MRI Scans
Benjamin Villard, Ernesto Zacur, Erica Dall'Armellina, Vicente Grau

Phase-Based Registration Of Cardiac Tagged MR Images By Incorporating Anatomical Constraints
Yitian Zhou, Mathieu De Craene, Maxime Sermesant, Olivier Bernard

Segmentation And Registration Coupling From Short-Axis Cine MRI: Application To Infarct Diagnosis
Stephanie Marchesseau, Nicolas Duchateau, Hervé Delingette

Learning Optimal Spatial Scales For Cardiac Strain Analysis Using A Motion Atlas
Matthew Sinclair, Devis Peressutti, Esther Puyol-Anton, Wenjia Bai, David Nordsletten, Myrianthi Hadjicharalambous, Eric Kerfoot, Thomas Jackson, Simon Claridge, Christopher Aldo Rinaldi, Daniel Rueckert, Andrew King

3D Reconstruction Of Coronary Veins From A Single X-Ray Fluoroscopic Image
Maria Panayiotou, Daniel Toth, Peter Mountney, Alexander Brost, Jonathan M. Behar, Christopher A. Rinaldi, Tamer Adem, James Housden, Kawal Rhode

Integrating Atlas And Graph Cut Methods For LV Segmentation From Cardiac Cine MRI
Shusil Dangi, Nathan Cahill, Cristian Linte

Cartan Frame Analysis Of Hearts With Infarcts
Damien Goblot, Mihaela Pop, Kaleem Siddiqi

Standardized Framework To Study The Influence Of Left Atrial RF Catheter Ablation Parameters On Permanent Lesion Formation
Marta Nuñez, David Andreu, Marta Male, Francisco Alarcon, Lluís Mont, Constantine Butakoff, Oscar Camara

From CMR Image To Patient-Specific Simulation And Population-Based Analysis: Tutorial For An Openly Available Image Processing Pipeline
Maciej Marciniak, Hermenegild Arevalo, Jacob Tfelt-Hansen, Thomas Jespersen, Reza Jabbari, Charlotte Glinge, Niels Vejlstrup, Thomas Engstrøm, Mary M. Maleckar, Kristin Mcleod

Segmentation And Tracking Of Myocardial Boundaries Using Dynamic Programming
Athira Jacob, Varghese Alex, Ganapathy Krishnamurthi

Registration With Adjacent Anatomical Structures For Cardiac Resynchronization Therapy Guidance
Daniel Toth, Maria Panayiotou, Alexander Brost, Jonathan M. Behar, Christopher A. Rinaldi, Kawal Rhode, Peter Mountney

Estimation Of Purkinje Activation From 12-Lead ECG: An Intermittent Left Bundle Branch Block Study
Sophie Giffard-Roisin, Lauren Forvague, Jessica Webb, Roch Mollero, Jack Lee, Hervé Delingette, Nicholas Ayache, Reza Razavi, Maxime Sermesant

4D Automatic Center Detection Of The Right And Left Ventricles From Cine Short-Axis MRI
Hakim Fadil, John J. Totman, Stephanie Marchesseau

Novel Looped-Catheter-Based 2D-3D Registration Algorithm For MR, 3DRx And X-Ray Images: Validation Study In An Ex-Vivo Heart
Michael Truong, Alison Liu, James Housden, Graeme Penney, Mihaela Pop, Kawal Rhode

Left-Ventricle Basal Ring Constrained Parametric Mapping To Unitary Domain
Antoni Gurgui, Debora Gil, Enric Marti, Vicente Grau

Quasi-Conformal Technique For Integrating And Validating Myocardial Tissue Characterization In MRI With Ex-Vivo Human Histological Data
David Soto-Iglesias, Diego Penela, Xavier Planes, Veronika Zimmer, David Andreu, Juan Acosta, Gemma Piella, Rafa Sebastian, Damian Sanchez-Quintana, Antonio Berruezo, Oscar Camara

Myocardial Scar Quantification Using SLIC Supervoxels - Parcellation Based On Tissue Characteristic Strains
Iulia Popescu, Benjamin Irving, Alessandra Borlotti, Erica Dall'Armellina, Vicente Grau

13:00 **Lunch**

14:00 **Invited Talk 2** - Model-based Large Scale Cardiac Analytics
Dimitris Metaxas, Rutgers University

17 OCTOBER SATELLITE EVENTS

Oral Session 2

15:00 Image-Based Real-Time Motion Gating Of 3D Cardiac Ultrasound Images
Maria Panayiotou, Devis Peressutti, Andrew King, Kawal Rhode, James Housden

15:20 Novel Framework To Augment Real-Time Cardiac MR Image-Guided EP Studies With T1 Mapping-Based Computational Heart Models
Sebastian Ferguson, Maxime Sermesant, Samuel Oduneye, Sophie Giffard-Roisin, Michael Truong, Labonny Biswas, Nicholas Ayache, Graham Wright, Mihaela Pop

15:40 Left Atrial Appendage Segmentation Based On Ranking 2D Segmentation Proposals
Lei Wang, Jianjiang Feng, Cheng Jin, Jiwen Lu, Jie Zhou

16:00 **Coffee Break**

Oral Session 3

16:30 Correction Of Slice Misalignment In Multi-Breath-Hold Cardiac MRI Scans
Benjamin Villard, Ernesto Zacur, Erica Dall'Armellina, Vicente Grau

16:50 Phase-Based Registration Of Cardiac Tagged MR Images By Incorporating Anatomical Constraints
Yitian Zhou, Mathieu De Craene, Maxime Sermesant, Olivier Bernard

17:10 Closing Remarks, Awards and Adjourn

CARE: Workshop on Computer-Assisted and Robotic Endoscopy

09:00 Registration and Speaker Check-in

09:25 Welcome and Opening Remarks

Oral Session 1

09:30 Hybrid Tracking And Matching Algorithm For Mosaicking Multiple Surgical Views
Chisato Takada, Toshiyuki Suzuki, Ahmed Afifi, Toshiya Nakaguchi

09:50 ORBSLAM-Based Endoscope Tracking And 3D Reconstruction
Nader Mahmoud, Iñigo Cirauqui, Alexandre Hostettler, Christophe Doignon, Luc Soler, Jacques Marescau, J.M.M. Montiel

10:10 Real-Time Segmentation Of Non-Rigid Surgical Tools Based On Deep Learning And Tracking
Luis C. García-Peraza-Herrera, Wenqi Li, Caspar Gruijthuijsen, Alain Devreker, George Attilakos, Jan Deprest, Emmanuel Vander Poorten, Danail Stoyanov, Tom Vercauteren, Sébastien Ourselin

10:30 **Coffee Break**

11:00 **Invited Talk 1 -**
Mahdi Azizian, Intuitive Surgical

Oral Session 2

12:00 Assessment Of Electromagnetic Tracking Accuracy For Endoscopic Ultrasound
Ester Bonmati, Yipeng Hu, Kurinchi Gurusamy, Brian Davidson, Stephen P Pereira, Matthew J Clarkson, Dean C Barratt

12:20 Probe Tracking And Its Application In Automatic Acquisition Using A Trans-Esophageal Ultrasound Robot
Shuangyi Wang, Davinder Singh, David Lau, Kiran Reddy, Kaspar Althoefer, Kawal Rhode, Richard J. Housden

12:40 A System For Augmented Reality Guided Laparoscopic Tumor Resection With Quantitative Ex-Vivo User Evaluation
Toby Collins, Pauline Chauvet, Clément Debize, Daniel Pizarro, Adrien Bartoli, Michel Canis, Nicolas Bourdel

13:00 **Lunch**

17 OCTOBER SATELLITE EVENTS

14:00 **Invited Talk 2 -**
Pierre Jannin, INSERM, University of Rennes 1

Oral Session 3

15:00 Evaluation Of i-Scan Virtual Chromoendoscopy And Traditional Chromoendoscopy For The Automated Diagnosis Of Colonic Polyps
Georg Wimmer, Michael Gadermayr, Roland Kwitt, Michael Häfner, Dorit Merhof, Andreas Uhl

15:20 Weakly-Supervised Lesion Detection In Video Capsule Endoscopy Based On A Bag-Of-Color Features Model
Michael Vasilakakis, Dimitrios K Iakovidis, Evaggelos Spyrou, Anastasios Koulaouzidis

15:40 Transfer Learning For Colonic Polyp Classification Using Off-The-Shelf CNN Features
Eduardo Ribeiro, Andreas Uhl, Georg Wimmer, Michael Häfner

16:00 **Coffee Break**

Oral Session 4

16:30 Extended Multi-Resolution Local Patterns - A Discriminative Feature Learning Approach For Colonoscopy Image Classification
Siyamalan Manivannan, Emanuele Trucco

16:50 Convolutional Neural Network Architectures For The Automated Diagnosis Of Celiac Disease
Georg Wimmer, Sebastian Hegenbart, Andreas Vécsei, Andreas Uhl

17:10 Presentation of KUKA Best Paper Awards

17:20 Panel Discussion

17:55 Closing Remarks

RAMBO: Workshop on Reconstruction and Analysis of Moving Body Organs

09:00 Welcome and Opening Remarks

Oral Session 1 - Registration

09:05 Point-Spread-Function-Aware Slice-To-Volume Registration: Application To Upper Abdominal MRI Super- Resolution
Michael Ebner, Manil Chouhan, Premal Patel, David Atkinson, Zahir Amin, Samantha Read, Shonit Punwani, Stuart Taylor, Tom Vercauteren, Sebastien Ourselin

09:20 Motion Correction Using Subpixel Image Registration
Amir HajiRassouliha, Andrew J. Taberner, Martyn Nash, Poul M. F. Nielsen

09:35 Incompressible Phase Registration For Motion Estimation From Tagged Magnetic Resonance Images
Fangxu Xing, Jonghye Woo, Arnold Gomez, Dzung Pham, Philip Bayly, Maureen Stone, Jerry Prince

09:50 **Invited Talk 1** - Next Generation Image Registration: Can An Intelligent Agent Learn To Register Images?
Ali Kamen, Siemens Healthcare

10:30 **Coffee Break**

11:00 **Invited Talk 2 -** Motion In Medical Image Computing: Curse or Blessing?
Tom Vercauteren, University College London

Oral Session 2 - Segmentation

11:40 Recurrent Fully Convolutional Neural Networks For Multi-Slice MRI Cardiac Segmentation
Giovanni Montana

Oral Session 3 - Reconstruction

11:55 Whole-Heart Single Breath-Hold Cardiac Cine: A Robust Motion-Compensated Compressed Sensing Reconstruction Method
Javier Royuela-del-Val, Muhammad Usman, Lucilio Cordero-Grande, Marcos Martin-Fernandez, Federico Simmross-Wattenberg, Claudia Prieto, Carlos Alberola-López

17 OCTOBER SATELLITE EVENTS

12:10 Motion Estimated-Compensated Reconstruction With Preserved-Features In Free-Breathing Cardiac MRI
Aurelien Bustin, Anne Menini, Martin Janich, Darius Burschka, Jacques Felblinger, Anja Brau, Freddy Odille

12.25 Robust Reconstruction Of Accelerated Perfusion MRI Using Local And Nonlocal Constraints
Cagdas Ulas, Pedro Gomez, Felix Krahmer, Jonathan Sperl, Marion Menzel, Bjoern Menze

12:40 Graph-Based 3D-Ultrasound Reconstruction Of The Liver In The Presence Of Respiratory Motion
Houssem-Eddine Gueziri, Sébastien Tremblay, Catherine Laporte, Rupert Brooks

12.55 Closing Remarks

PATCHMI: Workshop on Patch-based Techniques in Medical Imaging

08:00 Registration, speaker check-in and poster setup

08:30 Welcome and Opening Remarks

08:45 **Invited Talk 1** - Patches And Pulse Sequences For MR Image Intensity Normalization
Jerry Prince, Johns Hopkins University

09:45 **Invited Talk 2 -**
Gary Christensen, University of Iowa

10:30 **Coffee Break and Poster Session**

Patch-Based DTI Grading: Application To Alzheimer's Disease Classification
Kilian Hett, Vinh-Thong Ta, Rémi Giraud, Mary Mondino, Jose Manjon, Pierrick Coupé

HIST: Hyperintensity Segmentation Tool
Jose Manjon, Pierrick Coupe, Parnesh Raniga, Ying Xia, Jurgen Fripp, Olivier Salvado

CapAIBL: Automated Reporting Of Cortical PET Quantification Without Need Of MRI On Brain Surface Using A Patch-Based Method
Vincent Dore, Pierrick Bourgeat Victor Villemagne, Jurgen Fripp, David Ames, Lance Macaulay, Colin Masters, Christopher Rowe, Olivier Salvado

High Resolution Hippocampus Subfield Segmentation Using Multispectral Multi-Atlas Patch-Based Label Fusion
Jose Enrique Gómez, Pierrick Coupe, Jose Manjon

Identification Of Water And Fat Images In Dixon MRI Using Aggregated Patch-Based Convolutional Neural Networks
Liang Zhao, Yiqiang Zhan, Dominik Nickel, Matthias Fenchel, Berthold Kiefer, Sean Zhou

Estimating Lung Respiratory Motion Using Combined Global And Local Statistical Models
Zhong Xue, Ramiro Pino, Bin Teh

11:00 **Oral Session**

Robust And Accurate Appearance Models Based On Joint Dictionary Learning: Data From The Osteoarthritis Initiative
Anirban Mukhopadhyay, Stefan Zachow, Hans Lamecker

Patch-Based Discrete Registration Of Clinical Brain Images
Adrian Dalca, Andreea Bobu, Natalia Rost, Polina Golland

Hierarchical Multi-Atlas Segmentation Using Label-Specific Embeddings, Target-Specific Templates And Patch Refinement
Christoph Arthofer, Paul Morgan, Alain Pitiot

Supervoxel-Based Hierarchical Markov Random Field Framework For Multi-Atlas Segmentation
Ning Yu, Hongzhi Wang, Paul Yushkevich

12:45 Closing Remarks

17 OCTOBER SATELLITE EVENTS

BACON: Workshop on Brain Analysis using Connectivity Networks

09:00 Welcome and Opening Remarks

09:15 **Invited Talk 1** - Extracting Neuro-Phenotypes From The Brain At Rest
Gael Varoquaux, INRIA

Oral Session 1

09:45 Multiple-View Spectral Clustering For Group-Wise Functional Community Detection
Nathan Cahill, Harmeet Singh, Chao Zhang, Daryl Corcoran, Alison Prengaman, Paul Wenger, John Hamilton, Peter Bajorski, Andrew Michael

10:05 An Empirical Study Of Continuous Connectivity Degree Sequence Equivalents
Daniel Moyer, Boris Gutman, Joshua Faskowitz, Neda Jahanshad, Paul M. Thompson

10:30 **Coffee Break**

11:00 **Invited Talk 2** - The Genetics Of Brain Structural Connectivity
Neda Jahanshad, University Of Southern California

Oral Session 2

11:20 Cortical Geometry Network And Topology Markers For Parkinson's Disease Diagnosis
Amanmeet Garg, Donghuan Lu, Karteek Popuri, Mirza Faisal Beg

11:40 Comparison Of Brain Networks With Unknown Correspondences
Sofia Ira Ktena, Sarah Parisot, Jonathan Passerat-Palmbach, Daniel Rueckert

12:00 Kernel Classification Of Connectomes Based On Earth Mover's Distance Between Graph Spectra
Yulia Dodonova, Mikhail Belyaev, Anna Tkachev, Dmitry Petrov, Leonid Zhukov

12:30 Closing Remarks

ML-CDS: Workshop on Multimodal Learning for Clinical Decision Support

14:00 Welcome and Opening Remarks

14:05 **Invited Talk -** Advances In The Adoption Of Clinical Decision Support In Medicine,
Orest Boyko, University of Southern California

Oral Session 1

15:05 3-D Convolutional Neural Networks For Glioblastoma Segmentation
Darvin Yi, Mu Zhou, Zhao Chen, Olivier Gevaert

15:30 Neonatal Brain Segmentation From Multi-Modality MR Images Using Fully Convolutional Networks
Xinying Wang, Hao Chen, Lequan Yu, Tianjin Zhang, Jing Qing, Pheng-Ann Heng

16:00 **Coffee Break**

Oral Session 2

16:30 Prediction Of Autism Treatment Response From Baseline fMRI Using Random Forests And Tree Bagging
Nicha C. Dvornek, Daniel Yang, Archana Venkataraman, Pamela Ventola,Lawrence H. Staib, Kevin A. Pelphrey, James S. Duncan

17:00 Multimodal Non-Rigid Registration Of Head And Neck Images With Deep Learning-Based Bone Segmentation
Bulat Ibragimov, Franjo Pernu, Primoz Strojan, Lei Xing

17:30 Panel with experts from academia, clinicians and industry

17 OCTOBER SATELLITE EVENTS

HVSMR: Workshop & Challenge on Whole-heart and Great Vessel Segmentation from 3D Cardiovascular MRI in Congenital Heart Disease

14:00 **Invited Talk 1** - Applications Of 3D Printed Models In Congenital Heart Disease: From Structural Percutaneous Interventions To Cardiac Surgery
Israel Valverde, Hospital Universitario Virgin del Rocio & Institute of Biomedicine of Seville

14:20 **Invited Talk 2** - Model-Based Segmentation Of Cardiac Images In Multi-Modality Data
Puneet Sharma, Siemens Healthcare

14:40 **Invited Talk 3** - The Cardiac Atlas Project: A Repository For Congenital Heart Disease Imaging Studies
Alistair Young, University of Auckland

15:00 Panel Discussion with keynote speakers

15:30 **Coffee Break and Poster Session**

Total Variation Random Forest: Fully Automatic MRI Segmentation In Congenital Heart Disease
Anirban Mukhopadhyay

Strengths And Pitfalls Of Whole-Heart Atlas-Based Segmentation In Congenital Heart Disease Patients
Maria A. Zuluaga, Benedetta Biffi, Andrew M. Taylor, Silvia Schievano, Tom Vercauteren, Sebastien Ourselin

Automatic Heart And Vessel Segmentation Using Random Forests And A Local Phase Guided Level Set Method
Chunliang Wang, Qian Wang, Orjan Smedby

A GPU Based Diffusion Method For Whole-Heart And Great Vessel Segmentation
Philipp Losel, Vincent Heuveline

Fast Fully-Automatic Segmentation Of Cardiac Images Using 3-D MRF Model Optimization And Substructures Tracking
Georgios Tziritas

Automatic Whole-Heart Segmentation In Congenital Heart Disease Using Deeply-Supervised 3D FCN
Jinpeng Li, Rongzhao Zhang, Lin Shi, Defeng Wang

Oral Session

16:30 Challenge Overview: Clinical Motivation, Data And Evaluation
Danielle F. Pace

16:45 Dilated Convolutional Neural Networks For Cardiovascular MR Segmentation In Congenital Heart Disease
Jelmer M. Wolterink, Tim Leiner, Max A. Viergever, Ivana Isgum

17:00 3D FractalNet: Dense Volumetric Segmentation For Cardiovascular MRI Volumes
Lequan Yu, Xin Yang, Jing Qin And Pheng-Ann Heng

17:15 Automated Cardiovascular Segmentation In Patients With Congenital Heart Disease From 3D CMR Scans: Combining Multi-Atlases And Level-Sets
Rahil Shahzad, Shan Gao, Qian Tao, Oleh Dzyubachyk, Rob Van Der Geest

17:30 Award Ceremony, Closing Remarks and Future Directions

CHALLENGES

TUPAC: Tumor Proliferation Assessment Challenge

The daily program will be announced at the website (http://tupac.tue-image.nl) by the TUPAC organizers

CREMI: Challenge on Circuit Reconstruction from Electron Microscopy

14:00 Introduction
Jan Funke

14:30 **Invited Talk 1** -
Juan Nunez-Iglesias, University of Melbourne

Oral Session 1

15:00 Neuron Segmentation Presentation by group IAL

15:30 Neuron Segmentation Presentation by group SCI

16:00 **Coffee Break**

17 OCTOBER SATELLITE EVENTS

Oral Session 2

16:30 Neuron Segmentation And Synaptic Cleft Detection Presentation By Group DIVE

17:00 Synaptic Cleft Detection Presentation By Group SDG

17:30 **Invited Talk 2 -**
Anna Kreshuk, HCI Heidelberg

TUTORIALS

PAI: Photoacoustic Imaging: State-of-the-art, Image Reconstruction, and Clinical Translation

09:30 Introduction To Photoacoustic Imaging
Paul Beard, University College London

10:00 Image Reconstruction In Photoacoustic Tomography / K-Wave
Ben Cox, University College London

10:30 **Coffee Break**

11:00 Quantitative Photoacoustic Imaging
Wiendelt Steenbergen, University Of Twente

11:30 Photoacoustic Microscopy
Mehmet Burçin Ünlü, Boğaziçi University

12:00 Photoacoustic Imaging In Clinical Practice
Adrien Desjardins, University College London

12:30 Panel discussion and questions

AFMRI: Tutorial on Advances in fMRI

14:00 Welcome and Opening Remarks

BOLD Approaches to fMRI Analysis

14:05 Population Receptive Field Modeling Of Orientation Contrasted Retinotopy
Funda Yildirim, University Of Groningen

14:30 Representational Similarity Analysis To Identify Visual Action Codes In The Human Brain
Burcu A. Urgen, University Of California San Diego

Connectivity Matters

14:55 Genetic Variance In Resting-State Functional Connectivity
Francois Chouinard-Decorte, MNI, Mcgill University

15:20 Subtypes Of Functional Brain Organization Are Associated With Autism Symptoms
Sebastian Urchs, MNI, Mcgill University

15:45 Dynamic Functional Connectivity Analysis For fMRI Data: An Application To Classification Of Cocaine Addicted Patients
Ünal Sakoğlu, University Of Houston-Clear Lake

16:10 **Coffee Break**

Multi-modality Brain Imaging

16:40 A Cross-Modal, Cross-Species Comparison Of Connectivity Measures In The Primate Brain
Andrew Reid, Radboud University Nijmegen

17:05 On The Intra-Brain Propagation Of Pathologic Functional Signals In Neurodegeneration
Yasser Iturria Medina, MNI, Mcgill University

17:30 Multimodal Integration Of High-Density EEG And fMRI During Controlled Tasks And Spontaneous Epileptic Activity
Ümit *Aydin, Concordia University*

17:55 Closing Remarks

21 OCTOBER SATELLITE EVENTS OVERVIEW

FULL DAY : 09:00 – 18:00
AM : 09:00 – 13:00
PM : 14:00 – 18:00

(W)SESAMI: Workshop on Spectral and Shape Analysis in Medical Imaging / page: 80
FULL DAY – Athenaeum CC I Meeting Room

(W)OMIA: Workshop on Ophthalmic Medical Image Analysis / page: 81
FULL DAY – Lambda Meeting Room

(W)BAMBI: Workshop on Bayesian and grAphical Models for Biomedical Imaging / page: 84
FULL DAY – Omega Meeting Room

(CW)CPM: Computational Precision Medicine - Workshop and Challenges on Radio-Pathomics, Digital Pathology & Radiomics / page: 85
FULL DAY – Athenaeum CC II-III Meeting Room

(CW)M2CAI: Workshop & Challenge on Modeling and Monitoring of Computer Assisted Interventions / page: 86
FULL DAY – Delta Meeting Room

(W)DLMIA: Workshop on Deep Learning in Medical Image Analysis * / page: 87
FULL DAY – Ypsilon 1-2-3 Meeting Room

(W)CDMRI: Workshop on Computational Diffusion MRI / page: 90
FULL DAY – Ypsilon 4-5 Meeting Room

(W)MCV: Medical Computer Vision Workshop: Algorithms for Big Data / page: 92
FULL DAY – Omikron II Meeting Room

(T)XNAT: Medical Data Management with XNAT: From Study Organisation to Distributed Processing with OpenMOLE / page: 101
AM – Alpha/Beta Meeting Room

(T)ASFND: MICCAI Tutorial on Analysis of Structural and Functional Neuroimaging Data in Health and Disease / page: 102
AM – Epsilon/Zeta Meeting Room

(W)PIPPI: Workshop on Perinatal, Preterm and Paediatric Image Analysis / page: 94
AM – Omikron I Meeting Room

(W)SASHIMI: Workshop on Simulation and Synthesis in Medical Imaging / page: 95
AM – Theta Meeting Room

(C)MSSEG: MS Segmentation Challenge Using a Data Management and Processing Infrastructure / page: 99
AM – Sigma Meeting Room

21 OCTOBER SATELLITE EVENTS OVERVIEW

(W)PIA: Workshop on Pulmonary Image Analysis / page: 97
PM – Omikron I Meeting Room

(W)LABELS: Workshop on Large-scale Annotation of Biomedical data and Expert Label Synthesis / page: 98
PM – Alpha/Beta Meeting Room

(C)PETSEG: PET Segmentation Challenge Using a Data Management and Processing Infrastructure / page: 100
PM – Sigma Meeting Room

*** Please note that DLMIA Workshop will start at 08:30 on 21 October**

21 OCTOBER SATELLITE EVENTS

Disclaimer: The daily schedules were prepared by each event's organizers individually. The program below is the most recent version at the time of the publication of this booklet and might have undergone minor revisions since then. The participants are advised to check the website for most recent programs of each event.

WORKSHOPS

SESAMI: Workshop on Spectral and Shape Analysis in Medical Imaging

09:00 Introduction

Oral Session 1

09:10 A Volumetric Conformal Mapping Approach To Spectral Clustering Of White Matter Fibers
Vikash Gupta, Gautam Prasad, Paul Thompson

09:30 Deep Spectral-Based Shape Features For Alzheimer's Disease Classification
Mahsa Shakeri, Herve Lombaert, Shashank Tripathi, Samuel Kadoury

09:50 Functional Maps For Brain Classification On Spectral Domain
Simone Melzi, Alessandro Mella, Letizia Squarcina, Marcella Bellani, Cinzia Perlini, Mirella Ruggeri, Carlo Altamura, Paolo Brambilla, Umberto Castellani

10:10 Volume Representation Of Parenchymatous Organs By Volumetric Selforganizing Deformable Model
Shoko Miyauchi, Ken'ichi Morooka, Tokuo Tsuji, Yasushi Miyagi, Takaichi Fukuda, Ryo Kurazume

10:30 **Coffee Break**

11:00 **Invited Talk 1**
Guido Gerig, NYU School of Engineering

Oral Session 2

12:00 Reducing Variability In Anatomical Definitions Over Time Using Longitudinal Diffeomorphic Mapping
Daniel Tward, Chelsea Sicat, Timothy Brown, Arnold Bakker, Michael Miller

12:20 Spatio-Temporal Shape Analysis Of Cross-Sectional Data For Detection Of Early Changes In Neurodegenerative Disease
Claire Cury, Marco Lorenzi, David Cash, Jennifer M Nicholas, Alexandre Routier, Jonathan Rohrer, Sebastien Ourselin, Stanley Durlemann, Marc Modat

12:40 Longitudinal Scoliotic Trunk Analysis Via Spectral Representation And Statistical Analysis
Ola Ahmad, Herve Lombaert, Stefan Parent, Hubert Labelle, Jean Dansereau, Farida Cheriet

13:00 **Lunch**

14:00 **Invited Talk 2**
Tom Fletcher, University of Utah

Oral Session 3

15:00 Statistical Shape Model With Random Walks For Inner Ear Segmentation
Esmeralda Ruiz Pujadas, Hans Martin Kjer, Gemma Piella, Miguel Angel González Ballester

15:20 Volumetric Image Pattern Recognition Using Three-Way Principal Component Analysis
Atsushi Imiya

15:40 Shape Preservation Based On Gaussian Radial Basis Function Interpolation On Human Corpus Callosum
Umut Orcun Turgut, Didem Gökçay

16:00 **Coffee Break**

OMIA: Workshop on Ophthalmic Medical Image Analysis

09:00 Registration And Poster Set-Up

09:30 Opening Remarks

09:40 **Invited Talk 1** - From The Bench To Clinical Applications: Opportunities In Ophthalmic Imaging From The Lab To The Individualized Patient Therapies
Tunde Peto, Queen's University Belfast

10:30 **Coffee Break And Poster Session 1**

Motion Correction in Optical Coherence Tomography for Multi-modality Retinal Image Registration
Jun Cheng, Jimmy Addison Lee, Guozhen Xu, Ying Quan, Ee Ping Ong, Damon Wing Kee Wong

Artefacts Removal from Optical Coherence Tomography Angiography
Ee Ping Ong, Jun Cheng, Ying Quan, Guozhen Xu, Damon W. K.

Stereo Eye Tracking with a Single Camera for Ocular Tumor Therapy
Stephan Wyder, Philippe C. Cattin

21 OCTOBER SATELLITE EVENTS

Automated Morphometric Analysis of in-vivo Human Corneal Endothelium
Fabio Scarpa, Chiara Dalla Gassa, Alfredo Ruggeri

Retinal Image Quality Classification Using Neurobiological Models of the Human Visual System
Dwarikanath Mahapatra

Infrastructure for Retinal Image Analysis
Behdad Dashtbozorg, Samaneh Abbasi-Sureshjani, Jiong Zhang, Fan Huang, Erik Bekkers, Bart ter Haar Romeny

Image Quality Classification for DR Screening Using Convolutional Neural Networks
Ruwan Tennakoon, Dwarikanath Mahapatra, Pallab Roy, Suman Sedai, Rahil Garnavi

Diabetic Macular Edema Grading Based on Deep Neural Networks
Baidaa Al-Bander, Waleed Al-Nuaimy, Majid A. Al-Taee, Bryan M. Williams, Yalin Zheng

Optic Cup Segmentation Using Large Pixel Patch Based CNNs
Yundi Guo, Beiji Zou, Zailiang Chen, Qi He, Qing Liu, Rongchang Zhao

A Novel Machine Learning Model Based on Exudate Localization to Detect Diabetic Macular Edema
Oscar Perdomo, Sebastian Otalora, Francisco Rodr´ıguez, John Arevalo, Fabio A. González

Evaluation of the Areas Involved in Visual Cortex in Parkinson's Disease Using Diffusion Tensor Imaging
Somayeh Mohammadi Jooyandeh, Aida Kamalian, Sepideh Shiranvand, Mahsa Dolatshahi, Mohammad Hadi Shadmehr, Thomas C. Baghai, Farzaneh Rahmani, Ahmad Shojaie, Mohammad H. Aarabi

Anterior Chamber Angle Assessment System
Huazhu Fu, Yanwu Xu, Damon Wing Kee Wong, Jiang Liu, Mani Baskaran, Shamira A. Perera, Tin Aung

Geometric Connectivity Analysis Based on Edge CoOccurrences in Retinal Images
Samaneh Abbasi-Sureshjani, Jiong Zhang, Gonzalo Sanguinetti, Remco Duits, Bart ter Haar Romeny

Bridging Disconnected Curvilinear Structures via Numerical Evolutions of Completion Process in Ophthalmologic Images
Jiong Zhang, Erik Bekkers, Samaneh Abbasi-Sureshjani, Behdad Dashtbozorg, Bart ter Haar Romeny

Vessel Extraction for AS-OCT Angiography
Huazhu Fu, Yanwu

Oral Session 1

11:30 Segmentation of Optic Disc and Optic Cup in Retinal Fundus Images Using Coupled Shape Regression
Suman Sedai, Pallab Roy, Dwarikanath Mahapatra, Rahil Garnavi

11:50 A Depth Based Approach to Glaucoma Detection Using Retinal Fundus Images
Akshaya Ramaswamy, Keerthi Ram, Mohanasankar Sivaprakasam

12:10 Automatic Optic Disc Abnormality Detection in Fundus Images: A Deep Learning Approach
Hanan S. Alghamdi, Hongying Lilian Tang, Saad A. Waheeb, Tunde Peto

12:30 Automated Tessellated Fundus Detection in Color Fundus Images
Mengdi Xu, Jun Cheng, Damon Wing Kee Wong, Ching-Yu Cheng, Seang Mei Saw, Tien Yin Wong

12:50 **Lunch**

14:00 **Invited Talk 2 -** The VAMPIRE project: multi-modal retinal biomarkers for systemic conditions
Emanuele Trucco, University Of Dundee

Oral Session 2

14:50 Intensity-based Choroidal Registration Using Regularized Block Matching
Tiziano Ronchetti, Peter Maloca, Christoph Meier, Selim Orgűl, Christoph Jud, Pascal Hasler, Boris Považay, Philippe C. Cattin

15:10 Predicting Drusen Regression from OCT in Patients with Age-Related Macular Degeneration
Hrvoje Bogunović, Alessio Montuoro, Sebastian M. Waldstein, Magdalena Baratsits, Ferdinand Schlanitz, Ursula Schmidt-Erfurth

15:30 **Coffee Break And Poster Session 2**
See Poster Session 1 for the list of posters presented.

Oral Session 3

16:30 Restoration of Neonatal Retinal Images
Sharath M. Shankaranarayana, Keerthi Ram, Anand Vinekar, Kaushik Mitra, Mohanasankar Sivaprakasam

16:50 Motion Correction in Optical Coherence Tomography for Multi-modality Retinal Image Registration
Jun Cheng, Jimmy Addison Lee, Guozhen Xu, Ying Quan, Ee Ping Ong, Damon Wing Kee Wong

17:10 Open Discussion And Brainstorming

17:40 Closing Remarks

21 OCTOBER SATELLITE EVENTS

BAMBI: Workshop on Bayesian and grAphical Models for Biomedical Imaging

09:15 Welcome and Opening Remarks

09:30 **Invited Talk 1 -**
Ben Glocker, Imperial College London

10:30 **Coffee Break**

11:15 **Oral Session 1**

Statistical Method For Simultaneous Bias Correction And Registration For 3D Brain Template Estimation
Akshay Pai, Stefan Sommer, Lars Lau Raket, Line Kühnel, Sune Darkner, Lauge Sørensen, Mads Nielsen

Bayesian Multiview Manifold Learning Applied To Hippocampus Shape And Clinical Score Data
Giorgos Sfikas, Christophoros Nikou

Rigid Slice-To-Volume Medical Image Registration Trough Markov Random Fields
Roque Porchetto, Franco Stramana, Nikos Paragios, Enzo Ferrante

Non-Local Graph-Based Regularization For Deformable Image Registration
Bartlomiej W Papiez, Adam Szmul, Vicente Grau, Micheal Brady, Julia A Schnabel

13:00 **Lunch**

14:00 **Invited Talk 2 -**
Mark Jenkinson, University of Oxford

14:45 **Oral Session 2**

Sparse Probabilistic Parallel Factor Analysis For The Modeling Of PET And Task-fMRI Data
Vincent Beliveau

Unsupervised Framework For Consistent Longitudinal MS Lesion Segmentation
Saurabh Jain, Annemie Ribbens, Diana Sima, Sabine Van Huffel, Frederik Maes, Dirk Smeets

15:50 Closing Remarks and Best Paper Award

16:00 **Coffee Break**

CPM: Computational Precision Medicine - Workshop and Challenges on Radio-Pathomics, Digital Pathology & Radiomics

Oral Session 1 - Workshop I - Radiomics & Radiogenomics

09:00 The Cancer Imaging Archive - Data Resource For Algorithm Validation
John Freymann

09:20 Identifying Features From A Small Sample Size
Mihat Gönen

09:40 Presentations of selected paper I

09:55 Presentations of selected paper II

10:10 Presentations of selected paper III

10:30 **Coffee Break**

Oral Session 2 - Workshop II - Radio-Path-Omics

11:00 Co-Registration Of Ex Vivo Pathology With In Vivo Imaging For Identifying Radiomic Markers Of Disease Aggressiveness
Anant Madabhushi

11:15 Registration Of Multiple Stains (E.G. H&E - IHC, IHC1 - IHC2) In Pathology, And Evaluation Methodologies
Metin Gurcan

11:30 Combining Histochemical, Proteomic Markers With Histo-Pathologic Image Features For Improved Prognosis Prediction
George Lee

11:45 Anatomy-Histology-'Omic's Integration: Ground Truth Data Fusion
Doyle, Tomaszewski

12:00 Challenges Of 3D Histology Reconstruction In The Breast
Anne Martel

12:15 Histo-Genomic Profiling Of Tumor Cells In Colorectal Cancer
Nasir Rajpoot

21 OCTOBER SATELLITE EVENTS

12:30 Radiology-Pathology Correlation For Improved Breast Cancer Care: Results From The VPH-PRISM Project
Jeroen Van Der Laak

12:45 (TBA)
Ulysses Bayis

13:00 **Lunch**

Oral Session 3 - Imaging Challenges

14:00 Digital Pathology Challenge: Classification of Nuclei

15:00 Radiomics Challenge: Head and Neck Carcinoma

16:00 **Coffee Break**

16:30 Radio-Pathomics Challenge: Liver Metastases

17:30 Breast CAD Challenge

M2CAI: Workshop & Challenge on Modeling and Monitoring of Computer Assisted Interventions

08:30 Welcome and Opening Remarks

08:45 **Invited Talk 1 -**
Roy Eagleson, University of Western Ontario

09:30 **Oral Session 1**
Surgical Video Retrieval Using Deep Neural Networks.
Christos Varytimidis, Konstantinos Rapantzikos, Constantinos Loukas, Stefanos Kollias.

Towards The Intelligent OR – Implementation Of Distributed, Context-Aware Automation In An Integrated Surgical Working Environment.
Stefan Franke, Max Rockstroh, Erik Schreiber, Juliane Neumann, Thomas Neumuth.

10:30 **Coffee Break**

11:00 **Oral Session 2**

Multi-Stream Deep Architecture For Surgical Phase Recognition On Multi-View RGBD Videos.
Andru Putra Twinanda, Pramita Winata, Afshin Gangi, Michel De Mathelin Nicolas Padoy

BPMNSIX – A BPMN 2.0 Surgical Intervention Extension.
Juliane Neumann, Max Rockstroh, Stefan Franke, Thomas Neumuth

Surgical Phase Recognition: From Instrumented ORs To Hospitals Around The World.
Colin Lea, Joon Hyuck Choi, Austin Reiter, Gregory D. Hager

12:30 Best Paper Award

12:45 **Lunch**

13:45 **Invited Talk 2 -**
Marc Garbey, Houston Methodist Hospital

Oral Session 3

14:30 Introduction of challenge Surgical Workflow Challenge

14:40 Surgical Workflow Challenge Award

14:45 Presentations by Surgical Workflow Challenge Award recipients

15:45 **Coffee Break**

Oral Session 4

16:15 Introduction of challenge Surgical Tool Detection Challenge

16:25 Surgical Tool Detection Challenge Award

16:30 Presentations by Surgical Tool Detection Challenge Award recipients

17:30 Closing Remarks and Discussion

18:00 End of the event

DLMIA: Workshop on Deep Learning in Medical Image Analysis

08:00 Registration, Speaker Check-in and Poster Setup

08:20 Opening Remarks

08:30 **Invited Talk 1** -
Dinggang Shen, UNC-Chapel Hill

09:15 **Oral Session 1 – Reconstruction**
Convolutional Neural Network For Reconstruction Of 7T-Like Images From 3T MRI Using Appearance And Anatomical Features
Khosro Bahrami, Feng Shi, Islem Rekik, Dinggang Shen

21 OCTOBER SATELLITE EVENTS

De-Noising Of Contrast-Enhanced MRI Sequences By An Ensemble Of Expert Deep Neural Networks
Ariel Benou, Ronel Veksler, Alon Friedman, Tammy Riklin Raviv

09:45 **Oral Session 2 – Segmentation**
The Importance Of Skip Connections In Biomedical Image Segmentation
Michal Drozdzal, Eugene Vorontsov, Gabriel Chartrand, Samuel Kadoury, Christopher Pal

Multi-Dimensional Gated Recurrent Units For The Segmentation Of Biomedical 3D-Data
Simon Andermatt, Simon Pezold, Philippe C. Cattin

10:15 Presentation by Butterfly Network

10:30 **Coffee Break**

11:00 **Oral Session 3 – Microscopy image analysis**
Cell Segmentation Proposal Network For Microscopy Image Analysis
Saad Ullah Akram, Juho Kannala, Lauri Eklund, Janne Heikkila

HEp-2 Cell Classification Using K-Support Spatial Pooling In Deep CNNs (Poster Paper)
Xian-Hua Han, Jian Mei Lei, Yen-Wei Chen

11:30 **Poster Session**
Vessel Detection In Ultrasound Images Using Deep Convolutional Neural Networks
Erik Smistad, Lasse Lovstakken

Longitudinal Multiple Sclerosis Lesion Segmentation Using Multi-View Convolutional Neural Networks
Ariel Birenbaum, Hayit Greenspan

Automated Retinopathy Of Prematurity Case Detection With Convolutional Neural Networks
Daniel E Worrall, Clare Wilson, Gabriel Brostow

Fully Convolutional Network For Liver Segmentation And Lesions Detection
Avi Ben-Cohenl, Idit Diamant, Eyal Klang, Michal Amitai, Hayit Greenspan

Three-Dimensional CT Image Segmentation By Combining 2D Fully Convolutional Network With 3D Majority Voting
Xiangrong Zhou , Takaaki Ito, Ryosuke Takayama, Song Wang, Takeshi Hara, Hiroshi Fujita

Medical Image Description Using Multi-Task Loss CNN
Pavel Kisilev, Eli Sason, Ella Barkan, Sharbell Hashoul

Fully Automating Graf's Method For DDH Diagnosis Using Deep Convolutional Neural Networks
David Golan, Yoni Donner, Chris Mansi, Jacob Jaremko, Manoj Ramachandran

Understanding The Mechanisms Of Deep Transfer Learning For Medical Images
Hariharan Ravishankar And Prasad Sudhakar And Rahul Venkataramani And Sheshadri Thiruvenkadam, Pavan Annangi, Narayanan Babu, Vivek

A Region Based Convolutional Network For Tumor Detection And Classification In Breast Mammography
Ayelet Akselrod Ballin, Leonid Karlinsky, Sharon Alpert, Sharbell Hasoul, Rami Ben-Ari, Ella Barkan

13:00 **Lunch**

14:00 **Oral Session 4 – Multimodal data**
Estimating CT Image From MRI Data Using 3D Fully Convolutional Networks
Dong Nie, Xiaohuan Cao, Yaozong Gao, Li Wang, Dinggang Shen

Fast Predictive Image Registration
Xiao Yangi, Roland Kwitt, Marc Niethammer

14:30 **Invited Talk 2**
Nassir Navab, TU Munich

15:15 **Oral Session 5 – Localisation**
Automatic Slice Identification In 3D Medical Images With A ConvNet Regressor
Bob D. De Vos, Max A. Viergever, Pim A. De Jong, Ivana Isgum

Robust 3D Organ Localization With Dual Learning Architectures And Fusion (Poster Score)
Xiaoguang Lu, Daguang Xu, David Liu

15:45 Presentation By NVIDIA

16:00 **Coffee Break**

16:30 **Oral Session 6 – Inference**
Learning Thermal Process Representations For Intraoperative Analysis Of Cortical Perfusion During Ischemic Strokes
Nico Hoffmann, Edmund Koch, Gerald Steiner, Uwe Petersohn, Matthias Kirsch

Deep Learning Of Brain Lesion Patterns For Predicting Future Disease Activity In Patients With Early Symptoms Of Multiple Sclerosis
Youngjin Yoo, Lisa Tang, Tom Brosch, David K.B. Li, Luanne Metz, Anthony Traboulsee, Roger Tam

17:00 Closing Remarks and Best Paper Award

21 OCTOBER SATELLITE EVENTS

CDMRI: Workshop on Computational Diffusion MRI

08:00 Registration

09:00 **Invited Talk 1** - Neuronal Microstructure From Imaging In Space And Time
Dmitry Novikov, New York University

10:00 **Oral Session 1**
Multi-Spherical Diffusion MRI: Exploring Diffusion Time Using Signal Sparsity
Rutger Fick et al.

Noise Floor Removal Via Phase Correction Of Complex Diffusion-Weighted Images: Influence On DTI And Q-Space Metrics
Marco Pizzolato et al.

10:30 **Coffee Break**

11:00 **Invited Talk 2** - Diffusion MRI And Connectivity In The Human Connectome Project
Kamil Uğurbil, University Of Minnesota

12:00 **Oral Session 2**
Using Multiple Diffusion MRI Measures To Predict Alzheimer's Disease With A TV-L1 Prior
Julio Villalon-Reina et al.

Groupwise Structural Parcellation Of The Cortex: A Sound Approach Based On Logistic Models
Guillermo Gallardo et al.

12:30 **Poster Session**
Diffusion MRI Signal Augmentation - From Single Shell To Multi Shell With Deep Learning
Simon Koppers et al.

Accurate Diagnosis Of SWEDD vs. Parkinson Using Microstructural Changes Of Cingulum Bundle: Track-Specific Analysis
Farzaneh Rahmani et al.

Parcellation Of Human Amygdala Subfields Using Orientation Distribution Function And Spectral K-Means Clustering
Qiuting Wen et al.

Sparse Representation For White Matter Fiber Compression And Calculation Of Inter-Fiber Similarity
Gali Zimmerman Moreno et al.

Robust Construction Of Diffusion MRI Atlases With Correction For Inter-Subject Fiber Dispersion
Zhanlong Yang et al.

Working Memory Function In Recent-Onset Schizophrenia Patients Associated With Measures Of White Matter: Connectometry Approach
Mahsa Dolatshahi et al.

13:00 **Lunch and Poster Session**

14:00 **Invited Talk 3** - How Current Diffusion Imaging Technology Impacts Our Understanding Of Brain Circuitries And Shapes Neuroscience Research And Clinical Practice
Nikos Makris, Harvard Medical School

15:00 **Oral Session 3**
Colocalization Of Functional Activity And Neurite Density Within Cortical Areas
Achille Teillac et al.

Comparison Of Biomarkers In Transgenic Alzheimer Rats Using Multi-Shell Diffusion MRI
Rutger Fick et al.

15:30 **Invited Talk 4** - Sheet Structure Quantification In The Brain: From Theory To Practice
Chantal Tax, Harvard Medical School and Tom Dela Haije, Eindhoven University Of Technology

16:00 **Coffee Break**

16:30 **Oral Session 4**
Regularized Dictionary Learning With Robust Sparsity Fitting For Compressed Sensing Multishell HARDI
Kratika Gupta et al.

Denoising Diffusion-Weighted Images Using Grouped Iterative Hard Thresholding Of Multi-Channel Framelets
Jian Zhang et al.

17:00 Panel Discussion

21 OCTOBER SATELLITE EVENTS

MCV: Medical Computer Vision Workshop: Algorithms for Big Data

Oral Session 1

9:00 **Invited Talk 1** (TBA)

9:45 Constructing Subject- And Disease-Specific Effect Maps: Application To Neurodegenerative Diseases
Ender Konukoglu, Ben Glocker

10:00 Inferring Disease Status By Non-Parametric Probabilistic Embedding
Nematollah Batmanghelich, Ardavan Saeedi, Raul San Jose Estepar, Michael Cho, Sandy Wells

10:15 Guideline-Based Machine Learning For Standard Plane Extraction In 3D Cardiac Ultrasound
Peifei Zhu, Zisheng Li

10:30 **Coffee Break**

Oral Session 2

11:00 **Invited Talk 2** - Medical Image Recognition, Segmentation And Parsing: Machine Learning And Multiple Object Approaches
Kevin Zhou, Siemens Healthcare

11:50 A Lung Graph-Model For Pulmonary Hypertension And Pulmonary Embolism Detection On DECT Images
Yashin Dicente Cid, Henning Müller, Alexandra Platon, Jean-Paul Janssens, Frédéric Lador, Pierre-Alexandre Poletti, Adrien Depeursinge

12:00 BigBrain: Automated Cortical Parcellation And Comparison With Existing Brain Atlases
Marc Fournier, Claude Lepage, Lindsay B. Lewis, Karl Zilles, Katrin Amunts, Alan C. Evans

12:10 Gaze2Segment: A Pilot Study For Integrating Eye-Tracking Technology Into Medical Image Segmentation
Naji Khosravan, Haydar Celik, Baris Turkbey, Ruida Cheng, Evan Mccreedy, Matthew Mcauliffe, Sandra Bednarova, Elizabeth Jones, Xinjian Chen, Peter Choyke, Bradford Wood, Ulas Bagci

12:20 Representation Learning For Cross-Modality Classification
Gijs Van Tulder, Marleen De Bruijne

12:30 Explaining Radiological Emphysema Subtypes With Unsupervised Texture Prototypes: MESA COPD Study
Jie Yang, Elsa Angelini, Benjamin Smith, John Austin, Eric Hoffman, David Bluemke, R. Graham Barr, Andrew Laine

12:40 Landmark-Based Alzheimer's Disease Diagnosis Using Longitudinal Structural MR Images
Jun Zhang, Mingxia Liu, Le An, Yaozong Gao, Dinggang Shen

12:50 LATEST: Local AdapTivE and Sequential Training for Tissue Segmentation of Isointense Infant Brain MR Images
Li Wang, Yaozong Gao, Gang Li, Feng Shi, Weili Lin, Dinggang Shen

13:00 **Lunch and Poster Session**

Oral Session 3

14:00 **Invited Talk 3** - There Is No Hiding From Deep Learning: Setup And Results From The CAMELYON16 Challenge
Geert Litjens, Radboud University Medical Center

14:30 **Invited Talk 4** - The Genetic Heritability Of Neuroanatomical Shape
Mert R. Sabuncu, Harvard Medical School

15:00 **Invited Talk 5** (TBA)

15:30 **Invited Talk 6** (TBA)

16:00 **Coffee Break**

Oral Session 4

16:30 Automatic Detection Of Histological Artifacts In Mouse Brain Slice Images
Nitin Agarwal, Xiangmin Xu, M. Gopi

16:45 Automatic Segmentation Of Abdominal MRI Using Selective Sampling And Random Walker
Janine Thoma, Firat Ozdemir, Orcun Goksel

17:00 Lung Nodule Classification By Jointly Using Visual Descriptors And Deep Features
Yutong Xie, Jianpeng Zhang, Sidong Liu, Yong Xia

17:15 Adjourn (Information on post-conference LNCS proceedings)

21 OCTOBER SATELLITE EVENTS

PIPPI: Workshop on Perinatal, Preterm and Paediatric Image Analysis

09:30 Welcome and Opening Remarks

09:40 **Invited Talk**
Daniel Rueckert, Imperial College London

10:30 **Coffee Break**

11:00 **Oral Session 1**
Automatic Identification Of Multiple Planes Of A Fetal Organ From 2D Ultrasound Images
Pradeeba Sridar et al.

Placental Image Analysis Using Coupled Diffusion-Weighted And Multi-Echo T2 MRI And A Multi-Compartment Model
Andrew Melbourne et al.

Fully Automated Placenta Segmentation From 3D Ultrasound Images
Ipek Oguz et al.

Graph-Based Whole Body Segmentation In Fetal MR Images
Tong Zhang et al.

12:00 **Oral Session 2**
Spatio-Temporal Modelling Of Laminar Neurodevelopment From Fetal MRI
Ernst Schwartz et al.

A Novel Automated Probabilistic Tractography Tool With Anatomical Priors For Use In The Newborn Brain
Lilla Zöllei et al.

Changing Functional Connectivity In The Child's Developing Brain Affected By Ischaemic Stroke
Roxane Licandro et al.

Analysis Of Brain Tissue Volume And Composition In An Extremely-Preterm Born Adolescent Cohort
Andrew Melbourne et al.

12:50 Closing Remarks and Best Paper Award

SASHIMI: Workshop on Simulation and Synthesis in Medical Imaging

08:45 Registration and Opening Remarks

09:00 **Invited Talk** - Image Synthesis And Domain Adaptation In Computer Vision
Christoph Lampert, Institute of Science and Technology Austria

Oral Session 1 - Simulation

09:45 Image-Based PSF Estimation For Ultrasound Training Simulation
Oliver Mattausch, Orcun Goksel

10:00 Covering Population Variability: Morphing Of Computation Anatomical Models
Bryn Lloyd, Emilio Cherubini, Silvia Farcito, Esra Neufeld, Christian Baumgartner, Niels Kuster

10:15 Software Framework For Realistic MRI Simulations Using The Polyhedral Fourier Transform
Shuo Han, Daniel Herzka

10:30 Microstructure Imaging Sequence Simulation Toolbox
Andrada Ianus, Daniel C. Alexander, Ivana Drobnjak

10:45 **Coffee Break**

11:00 **Poster Session**
From Image-Based Modeling To The Modeling Of Imaging With The Virtual Population
Esra Neufeld, Bryn Lloyd, Niels Kuster

Numerical Simulation Of Ultrasonic Backscattering During Fracture Healing Using Numerical Models Based On Scanning Acoustic Microscopy Images
Vassiliki Potsika, Konstantinos Grivas, Theodoros Gortsas, Vasilios Protopappas, Demosthenes Polyzos, Dimitrios Fotiadis

GBM Modeling With Proliferation And Migration Phenotypes: A Proposal Of Initialization For Real Cases
Juan Ortiz-Pla, Elies Fuster-Garcia, Javier Juan-Albarracin, Juan Miguel Garcia-Gomez

Whole Image Synthesis Using A Deep Encoder-Decoder Network
Vasileios Sevetlidis, Mario Valerio Giuffrida, Sotirios Tsaftaris

Automated Quality Assessment Of Cardiac MR Images Using Convolutional Neural Networks
Le Zhang, Ali Gooya, Bo Dong, Rui Hua, Steffen Petersen, Pau Medrano-Gracia, Alejandro Frangi

Patch Based Synthesis Of Whole Head MR Images: Application To EPI Distortion Correction
Snehashis Roy, Yi-Yu Chou, Amod Jog, John Butman, Dzung Pham

MRI-TRUS Image Synthesis With Application To Image- Guided Prostate Intervention
John Onofrey, Ilkay Oksuz, Saradwata Sarkar, Rajesh Venkataraman, Lawrence Staib, Xenophon Papademetris

Automatic Generation Of Synthetic Retinal Fundus Images: Vascular Network
Elisa Menti, Lorenza Bonaldi, Lucia Ballerini, Alfredo Ruggeri, Emanuele Trucco

PURE: Panoramic Ultrasound Reconstruction By Seamless Stitching Of Volumes
Barbara Flach, Maxim Makhinya, Orcun Goksel

Oral Session 2 - Synthesis

11:45 Generation Of Realistic 4D Synthetic CSPAMM Tagged MR Sequence For Benchmarking Cardiac Motion Tracking Algorithms
Yitian Zhou, Mathieu De Craene, Oudom Somphone, Maxime Sermesant, Olivier Bernard

12:00 Pseudo-Healthy Image Synthesis For White Matter Lesion Segmentation
Chris Bowles, Chen Qin, Christian Ledig, Ricardo Guerrero Moreno, Alexander Hammers, Roger Gunn, Eleni Sakka, David Dickie, Maria Valdés Hernández, Natalie Royle, Joanna Wardlaw, Hanneke Rhodius-Meester, Betty Tijms, Afina Lemstra, Wiesje Van Der Flier, Frederik Barkhof, Philip Scheltens, Daniel Rueckert

12:15 Registration Of Pathological Images
Xiao Yang, Xu Han, Eunbyung Park, Stephen Aylward, Roland Kwitt, Marc Niethammer

12:30 Geometry Regularized Joint Dictionary Learning For Cross- Modality Image Synthesis In Magnetic Resonance Imaging
Yaweh Huang, Leandro Beltrachini, Ling Shao, Alejandro Frangi

PIA: Workshop on Pulmonary Image Analysis

14:00 Welcome and Opening Remarks

Oral Session 1

14:05 Alpha Shapes For Lung Segmentation In The Presence Of Large Tumors
Sarah E. Gerard, Hans J. Johnson, John E. Bayouth, Gary E. Christensen, Kaifang Du, Junfeng Guo, Joseph M. Reinhardt.

14:27 On A Spectral Image Metric For Non-Rigid Group-Wise Registration Of Dynamic MR Image Series
Robin Sandkuehler, Christoph Jud, Philippe C. Cattin.

Poster Teasers

14:50 Efficient Population-Based Big MR Data Analysis: A Lung Segmentation And Volumetry Example
Tatyana Ivanovska, Andreas Pomschar, Roberto Lorbeer, Wolfgang Kunz, Holger Schulz, Holger Hetterich, Henry Voelzke, Fabian Bamberg, Anette Peters, Florentin Woergoetter.

14:55 Searchable SQL Databases For Lung Nodule Annotations In The LIDC Collection
Jaspar Pahl, Keelin Murphy, Pietro Nardelli, Gerard Hooton, Padraig Cantillon-Murphy.

15:00 Challenges In The Registration Of Serial CT Images From Lung Radiotherapy Patients
Catarina Veiga, David Landau, Anand Devaraj, David Hawkes, Jamie R. Mcclelland

15:05 **Invited Talk** - Clinical Lung Imaging: A Breath Of Fresh Air
John Hurst, University College London

16:00 **Coffee Break and Poster Session**

Oral Session 2

16:50 Quantifying Emphysema Extent From Weakly Labeled CT Scans Of The Lungs Using Label Proportions Learning
Silas Nyboe Ørting, Jens Petersen, Mathilde M. W. Wille, Laura H. Thomsen, Marleen De Bruijne

17:12 Extraction Of Airway Trees Using Multiple Hypothesis Tracking And Template Matching
Raghavendra Selvan, Jens Petersen, Jesper H. Pedersen, Marleen De Bruijne.

21 OCTOBER SATELLITE EVENTS

17:34 Pulmonary Nodule Type Classification With Convolutional Networks
Francesco Ciompi, Kaman Chung, Arnaud A. A. Setio, Sarah J Van Riel, Ernst Th. Scholten, Paul K. Gerke, Colin Jacobs, Ugo Pastorino, Alfonso Marchiano, Mathilde M. W. Wille, Mathias Prokop, Bram Van Ginneken.

LABELS: Workshop on Large-scale Annotation of Biomedical data and Expert Label Synthesis

14:00 Welcome and Opening Remarks

14:05 **Invited Talk 1** - Semi-Supervised Learning, Active Learning, Domain Adaptation, And Data Annotation
Marco Loog, Delft University of Technology

15:00 **Oral Session**
Hierarchical Feature Extraction For Nuclear Morphometry-Based Cancer Diagnosis
Chi Liu

Playsourcing: A Novel Concept For Knowledge Creation In Biomedical Research
Shadi Albarqouni

Focused Proofreading To Reconstruct Neural Connectomes From EM Images At Scale
Stephen Plaza

16:00 **Coffee Break**

16:30 **Invited Talk 2** - Domain Adaptation for Microscopy Imaging
Pascal Fua, EPFL

17:15 **Poster and Demo Session**
Early Experiences With Crowdsourcing Airway Annotations In Chest CT
Veronika Cheplygina, Adria Perez-Rovira, Wieying Kuo, Harm Tiden, Marleen De Bruijne

Hierarchical Feature Extraction For Nuclear Morphometry-Based Cancer Diagnosis
Chi Liu

Using Crowdsourcing For Multi-Label Biomedical Compound Figure Annotation
Alba Garcia Seco De Herrera, Roger Schaer, Sameer Antani And Henning Müller

Towards The Semantic Enrichment Of Free-Text Annotation Of Image Quality Assessment For UKBB Cardiac Cine MRI Scans
Valentina Carapella, Ernesto Jimenez-Ruiz, Elena Lukaschuk, Nay Aung, Kenneth Fung, Jose Paiva, Mihir Sanghvi, Stefan Neubauer, Steffen Petersen, Ian Horrocks, Stefan Piechnik

Focused Proofreading To Reconstruct Neural Connectomes From EM Images At Scale
Stephen Plaza

Hands-Free Segmentation Of Medical Volumes Via Binary Inputs
Florian Dubost, Loic Peter, Christian Rupprecht, Benjamin Gutierrez-Becker, Nassir Navab

Playsourcing: A Novel Concept For Knowledge Creation In Biomedical Research
Shadi Albarqouni

CHALLENGES

MSSEG: MS Segmentation Challenge Using a Data Management and Processing Infrastructure

09:00 Welcome and Opening Remarks

09:05 Presentation of the challenge computational infrastructure

09:25 **Oral Session 1** - Evaluated algorithms teasers

Multiple Sclerosis Lesion Segmentation Using An Automated Multimodal Graph Cut
J. Beaumont, O. Commowick, C. Barillot

Automatic Multiple Sclerosis Lesion Segmentation From Intensity-Normalized Multi-Channel MRI
J. Beaumont, O. Commowick, C. Barillot

Automatic Multiple Sclerosis Lesion Segmentation With P-LOCUS
S. Doyle, F. Forbes And M. Dojat

MS Lesion Segmentation Using FLAIR MRI Only
J. Knight, A. Khademi

Automatic Multiple Sclerosis Lesion Segmentation Using Hybrid Artificial Neural Networks
A. Mahbod, C. Wang, O. Smedby

Nabla-Net: A Deep Dag-Like Convolutional Architecture For Biomedical Image Segmentation: Application To White-Matter Lesion Segmentation In Multiple Sclerosis
R. Mckinley, T. Gundersen, F. Wagner, A. Chan, R. Wiest, M. Reyes

Prediction Of MS Lesions Using Random Forests
J. Muschelli, E. Sweeney, J. Maronge, C. Crainiceanu

Unsupervised Multiple Sclerosis Lesion Detection And Segmentation Using Rules And Level Sets
E. Roura, M. Cabezas, S. Valverde, S. González-Villà, J. Salvi, A. Oliver, X. Lladó

Evaluation-Oriented Training Strategy On MS Segmentation Challenge 2016
M. M. Santos, P. R. B. Diniz, A. G. Silva-Filho, W. P. Santos

MRI Robust Brain Tissue Segmentation With Application To Multiple Sclerosis
X. Tomas-Fernandez, S. K. Warfield

A 3D Hierarchical Multimodal Detection And Segmentation Method For Multiple Sclerosis Lesions In MRI
H. Urien, I. Buvat, N. Rougon, I. Bloch

Multiple Sclerosis Lesion Detection And Segmentation Using A Convolutional Neural Network Of 3D Patches
S. Valverde, M. Cabezas, E. Roura, S. González-Villà, J. Salvi, A. Oliver, X. Lladó

Random Forest For Multiple Sclerosis Lesion Segmentation
F.J. Vera-Olmos, H. Melero, N. Malpica

10:30 **Coffee Break and Poster Session**

Oral Session 2

11:30 Workshop evaluation results and analysis

12:30 Round table discussion and perspectives of the challenge

12:55 Closing Remarks

PETSEG: PET Segmentation Challenge Using a Data Management and Processing Infrastructure

14:00 Welcome and Opening Remarks

14:05 Presentation of the challenge computational infrastructure

14:30 **Oral Session 1 -** Evaluated algorithms 10-min teasers

Ant Colony Segmentation Approach For Heterogeneous Volume Delineation In PET
A. Ouahabi, V. Jaouen, M. Hatt, D. Visvikis, H. Fayad

Image Features For Tumor Segmentation In PET Using Random Forest
S. Lieu, X. Huang, L. Li, W. Lu, S. Tan

Hybrid Edge And Region-Based Deformable Model For PET Tumor Segmentation
V. Jaouen, M. Hatt, H. Fayad, C. Tauber, D. Visvikis

Machine Learning Methods For Accurate Delineation Of Tumors In PET Images
J. Czakon, G. Zurek, P. Giedziun, J. Zebrowski, W. Dyrka

15:15 **Coffee Break and Poster Session**

Oral Session 2

16:15 Workshop evaluation results and analysis

17:15 Round table discussion and perspectives of the challenge

17:55 Closing Remarks

TUTORIALS

XNAT: Medical Data Management with XNAT: From Study Organisation to Distributed Processing with OpenMOLE

09:15 Welcome and Opening Remarks

09:30 Introduction To XNAT - Concepts, Web Interface
Dan Marcus, Washington University

10:30 **Coffee Break**

Oral Session

11:00 Programming XNAT - REST API, Python Interface
Rick Herrick, Washington University and Hakim Achterberg, Erasmus University

12:00 Distributed Processing Of XNAT Pipelines Using OpenMOLE
Jonathan Passerat-Palmbach, Imperial College London

13:00 Closing Remarks

21 OCTOBER SATELLITE EVENTS

ASFND: MICCAI Tutorial on Analysis of Structural and Functional Neuroimaging Data in Health and Disease

09:00 Welcome and Opening Remarks

Oral Session 1

09:15 Whole-Brain Models: Lessons From The Human Connectome
Gustavo Deco, Pompeu Fabra University

09:55 Examining The Genetic Underpinnings Of Brain Structure And Function
Mert R. Sabuncu, Harvard Medical School

10:35 **Coffee Break**

Oral Session 2

10:50 Analysis Of Structural And Functional Neuroimaging Data During Early Brain Development
Daniel Rueckert, Imperial College London

11:30 Connectivity-Driven Parcellation Of The Cerebral
Salim Arslan, Imperial College London

12:00 Connectome Harmonics: Linking Structure And Function Of The Human Brain
Selen Atasoy, Pompeu Fabra University

12:30 Discussion: Difficulties, open questions, research directions

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