MICCAI NICE 2012

The 15th International Conference on Medical Image Computing and Computer Assisted Intervention

1-5 OCTOBER 2012

ACROPOLIS CONVENTION CENTER - NICE, FRANCE

MICCAI 2012 FINAL PROGRAM

Inria informatics mathematics

MICCAI

www.miccai2012.org

CONTENTS

WELCOME ADDRESS

Welcome to MICCAI 2012 in Nice!

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Over the past 14 years, the MICCAI conferences have become a world-class international event attracting more than a thousand leading scientists, engineers and clinicians working at the intersection of Computational Sciences, Technologies and Medicine to advance the field of Medical Image Computing & Computer Assisted Interventions. Accepted contributions are published as full papers in the prestigious Lecture Notes in Computer Science (LNCS) indexed by Pubmed.

The MICCAI conference series was formed in 1998 by the merger of three conferences: CVRMed (Computer Vision, Virtual Reality and Robotics in Medicine), MRCAS (Medical Robotics and Computer Assisted Surgery) and VBC (Visualization in Biomedical Computing). The first CVRMed conference was also held in Nice in 1995, with 250 international participants and a highly cited but single volume of LNCS proceedings. In 2012, MICCAI is now attracting over 1100 attendees, and the proceedings span three volumes of LNCS. Moreover, the conference is now complemented by 32 MICCAI satellite events (workshops, challenges, tutorials) publishing their own proceedings.

MICCAI 2012 papers were selected through a rigorous reviewing process coordinated over 3 continents by a Program Chair and 2 Program Co-chairs assisted by an international Program Committee (PC) of 100 specialists. Decisions were based on anonymous reviews produced by almost 1000 reviewers. The process was double blind as authors did not know the names of the PC members/reviewers evaluating their papers, and the PC members/reviewers did not know the names of the authors.

The 252 accepted contributions (out of 781 submissions, i.e. a 32% acceptance ratio) came from 21 countries and 5 continents: about 50% from North America (40% USA and 8% Canada), 40% from Europe (mainly from France, Germany, the United Kingdom, Switzerland and The Netherlands), and 10% from Asia and the rest of the world. There will be 37 oral presentations during 7 single-track plenary sessions, and 6 poster sessions of 42 papers presented in parallel with the possibility, this year for the first time, of displaying dynamic material on 42 large screens.

In addition to this exciting scientific program, outstanding leading medical figures will contribute to MICCAI 2012: Prof. Alain Carpentier, President of the French Academy of Sciences, is our Honored Guest for his pioneering and visionary role in several of the domains covered by MICCAI. Prof. Jacques Marescaux, director of the Strasbourg IHU (Institut Hospitalo-Universitaire), is invited to deliver the keynote «Surgery for Life Innovation: Information Age and Robotics» and Professor Michel Haïssaguerre, director of the Bordeaux IHU, the keynote «Preventing Sudden Cardiac Death: Role of Structural and Functional Imaging».

The conference would have not been possible without the commitment and hard work of the members of the scientific and organization committees nor without the support of Inria and of our sponsors and partners.

I want to thank wholeheartedly:

- Hervé Delingette, Program Chair, Polina Golland and Kensaku Mori, Program Co-chairs, and the 100 Program Committee members and 913 scientific reviewers listed in this book, who produced together over three thousand reviews and recommendations,

- Xavier Pennec, Chair for the organization of 32 MICCAI satellite events (Workshops, Challenges, Tutorials), with Co-Chairs Tobias Heimann, Kilian Pohl and Akinobu Shimizu, and all the organizers of these events,

- Agnès Cortell, Local Organization Chair, who coordinated successfully the work of the local organizing team, the interaction with several Inria services (involving heavily Odile Carron and Matthieu Oricelli) with the MCI company, as well as Maxime Sermesant, Website Chair, who helped on many aspects of the conference, Grégoire Malandain, Poster Chair, who organized the digital poster sessions, Isabelle Strobant, heavily involved for the organization of the PC meeting in Nice and the invitation of guests, and Sébastien Ourselin for his help in coordinating industrial sponsorship,

- Emmanuelle Viau who coordinated the team at MCI including in particular Thibault Claisse, Thibault Lestiboudois, Anne-Sophie Moretti and Claire Vrignaud, and all students and engineers (mainly from Asclepios and Athena Inria teams) who helped with the scientific and local organization,

- Gérard Giraudon, Director of Inria Center Sophia Antipolis - Méditerranée, and Marc Barret, head of external affairs and technology transfer, for their support,

- Michel Cosnard, CEO of Inria, for his address at the opening ceremony of MICCAI 2012, and Gilles Kahn, late and deeply missed CEO of Inria, who encouraged the development of the first CVRMed conference and of the MICCAI topics at Inria,

- James Duncan as the President of the MICCAI Society and its board of directors who elected MICCAI 2012 to be held in Nice, Janette Wallace, Johanne Guillemette and Chris Wedlake for their contribution to the MICCAI Society and James Stewart for his precious help with the Precision Conference System,

- All our industrial and institutional sponsors and partners for their fantastic support of the conference.

Finally, I also want to thank all the MICCAI 2012 participants who came to Nice from more than 45 countries from all over the world, and I hope we enjoy together a memorable scientific event.

Nicholas Ayache, PhD,
General Chair, MICCAI 2012

GENERAL INFORMATION

Registration Desk

On-site Secretariat:

Sunday, September 30, 2012	17:00 - 19:00
Monday, October 1, 2012	07:30 - 21:00
Tuesday, October 2, 2012	07:00 - 18:30
Wednesday, October 3, 2012	08:00 - 18:00
Thursday, October 4, 2012	08:00 - 18:00
Friday, October 5, 2012	08:00 - 18:00

The congress documentation will be available at the Registration Desk for pre-registered delegates and for anyone wishing to register on site.

Exhibition – Opening Hours

The exhibition is located at the 3rd level of the convention center in the Agora 3 and Muses spaces

Tuesday, October 2, 2012	07:00 - 18:30
Wednesday, October 3, 2012	08:00 - 18:00
Thursday, October 4, 2012	08:00 - 18:00

Delegate Badge

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

Internet Access

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

Access codes:
Wifi network : miccai2012
Login: miccai2012
Password: miccai2012

Wifi access is also available in the Novotel on 1st October and 5th October 2012 through the Orange Wifi network (just enter your name and email to connect).

VISITOR INFORMATION

Money and Currency

Credit cards are accepted in many shops, hotels and restaurants (there is usually a minimum amount of between €7 and €15). For cash, you will find cash-points in many places in the city center (24 hours a day). Bank branches, exchange office and some post offices handle currency exchange transactions and traveller's cheques.
Whatever you are buying, prices are inclusive of service and all taxes.

Calling

To call France in France: 0 + number (9 digits)
To call France from abroad: 00 + 33 + number (9 digits)
To call abroad: 00 + country code + number

Opening Hours

Shops are usually open from 9 am to 7 pm from Monday to Saturday. Department stores may stay open until 9 pm. Banks are open from 8.30 to 12 noon and 2 to 4.30 pm, Monday to Friday, with some branches opening on Saturday mornings.

A few tips for a pleasant trouble-free stay

You are not allowed to smoke in indoor public places. You are strongly recommended to respect smoking/no smoking signs.
It is always useful to have a little cash on you at all times for little out-of-pocket expenses like taxi fares to the airport, drinks, etc.
A service charge is included in the price of each item on the menu in any cafe or restaurant as required by French law. In theory, no further tipping is expected.
However, it is pretty common to leave something after a bite to eat or drink. But it's never expected and is only given for good or attentive service, or at a place you attend frequently. Extra generosity will never hurt.
If you are driving, park only where authorised and respect speed limits on highways and motorways.

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, lost luggage and trip cancellation.

Emergency phone numbers

Dial the following numbers (toll-free)
SAMU (medical emergencies): 15
Police emergency: 17
Fire-brigade: 18
European emergency call: 112

Sightseeing

Nice, Capital of the French Riviera, is a charming city between sea and mountains, which has a strong cultural heritage. You will discover the French gastronomy and specialities from Nice, the numerous museums (Musée Matisse, Musée des Arts Asiatiques, Musée des Beaux Arts, Musée d'Art Moderne et d'Art Contemporain (MAMAC), Musée Chagall…) and of course various places like "la promenade des Anglais" or "le Vieux Nice". In "La Promenade des Anglais", you may practise sports like running, roller skating or cycling, enjoy the beauty of the Meditterean Sea and spend some time on the beach. You can also walk downtown to do some shopping or just discover the city by using the Tramway which allows you to go about everywhere in Nice. There are many places to go out to enjoy your evenings in the Vieux Nice, around the harbour or downtown.
The Nice tourism office staff will be located next to the Welcome Area and will be more than happy to help you planning your trip.

Transportation

Nice is popular for its ease of access: the Nice Côte d'Azur Airport is France's second-largest international airport. It is located 15 minutes from the Acropolis (7 km from the city centre). More than 50 airlines provide regular service to destinations throughout the world. An 80-minute flight links Nice to Paris, a connection that is offered 23 times a day.
http://en.nice.aeroport.fr

Nice inaugurated the first line of its tramway (T1) on November 24, 2007. The line runs for 8.7 km and stretches from the northern tip of Nice, Nice-Nord (Boulevard Comte de Falicon) near the Ray Stadium and the A8 motorway, all the way to Pont Michel in the Saint Roch neighbourhood.
This line runs by the Acropolis and will take you to the city center in 10 minutes for a 1 euro ticket (TBC).
http://www.tramway-nice.org

The Nice train station is located in the heart of the city. It has seven sets of tracks with covered platforms.
http://www.sncf.com/en/passengers

Bus service is also an excellent way to get around Nice. The network is extensive and serves the entire city.
http://www.lignedazur.com

Shipping service

To send back your proceedings to your laboratory, an express courier service called Chronopost is available at any French Post Office.
The closest Post Office is located at 34 RUE BARBERIS - 06000 NICE (1300m from Acropolis).
If is open Monday till Friday (08:30-10:00 and 13:45-17:00).
For more information on Chronopost, you can call +33 969 391 391.
You may also contact the following company "Mail Boxes Etc".
More information on the link: http://www.mbe-nice.fr/shipping_157.htm

Lunches and breaks

Lunches are included in the registration and served on site.

Official languages

All presentations will be given in English.

VENUE INFORMATION

Travelling to Nice Acropolis from the Airport

The Nice Acropolis conference center is located in the heart of Nice, approximately 15 minutes drive from the airport, within walking distance of the shopping area and close to the tramway (T1).

By Taxis:

Locations: Gate A1 at Terminal 1 and Gate A3 at Terminal 2.
Approximate cost from airport to Acropolis is €30.00 depending on time of day, traffic and amount of luggage. Remember to pay only the price displayed on the actual taxi meter. It is recommended that you always ask for a receipt.
Taxi Switchboard: +33 (0)4 93 13 78 78.

By Bus

From the Airport Terminal 1 & 2
Terminal 1 – Arrivals Level, outside Gate A0
Terminal 2 – Arrivals Level, outside between Gates A1 & A2

Lignes d'Azur Bus 98 (05:50 – 23:00, every 20 mins) + Tramway
Journey time: approx. 30 min - Fare 4€
Stop at "Cathédrale-Vieille Ville". Take the tram T1 direction "Pont Michel". Get off at "Acropolis" (on Avenue de la République). Cross the tracks, turn left on Rue Barberis then turn left again on Boulevard Risso, you'll see the venue on the other side of the street

Travelling to Nice Acropolis

By Bus

The following buses have a stop in vicinity of the Nice Acropolis Conference Center: 3, 4, 5, 6 (Stop Acropolis). Bus lines 88 and 89 have a stop near (Gare routière – terminal bus station) but not directly at Nice Acropolis.

By Tramway

Take the tram T1 direction "Pont Michel". Get off at "Acropolis" (on Avenue de la République). Cross the tracks, turn left on Rue Barberis then turn left again on Boulevard Risso, you'll see the venue on the other side of the street

By Car

GPS coordinates: 43.7042 N, 7.2808 E
Chargeable car park is available nearby. The nearest 24 hour car park (Parc de stationnement) is Vinci Park: Acropolis - Jean Bouin, Avenue du XV^{ème} Corps.

SPECIAL EVENTS

Monday 1 October, 2012

18:00 - 19:30 Student Event: Your career in Industry and Academia (Amphitheatre Hermes and Muses Nord - Acropolis Center)

The Student Event is open to all registered student conference delegates. This year the event is organized for students by students.

The event will start with a keynote talk by **Professor Sir Michael Brady** who has extensive experience in both industry and academic research. Following the keynote there will be the opportunity for students to meet both junior and senior professionals from industry and academia. This will be in a smaller setting inspired by speed dating to allow for more interaction. Due to space restrictions there is a maximum of 200 attendees for this part of the program.

19:30 - 21:00 Get together party (Agora 2 - Acropolis Center)

Tuesday 2 October, 2012

19:00 - 20:30 Welcome Cocktail at Palais Sarde (Nice)
Palais de la Préfecture - Place Pierre Gautier - 06000 Nice

The Palais Sarde is located at a 15 minute walking distance from Nice Acropolis. No transfer is provided to the Palais Sarde.

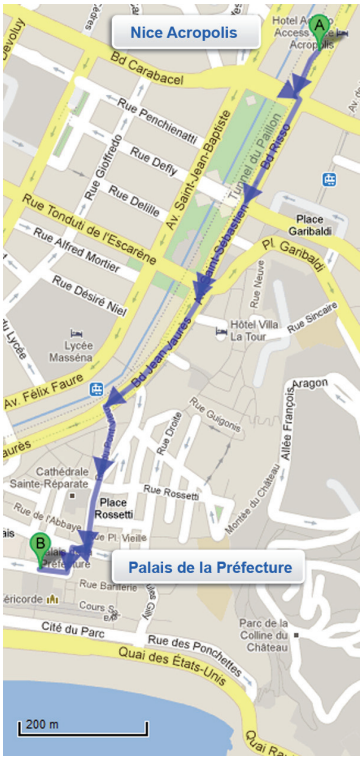
The Palais Sarde was first a ducal palace, then residence of the sovereigns of the Savoy States, to whom Nice belonged since 1388. It became a "Prefecture" for the first time during the First Empire. After Nice was united with France on 14 June 1860, it became officially, on 21 November 1860, the "Prefecture" of the new Alpes-Maritimes department. A Prefecture, created by Napoleon 1er in 1800, refers to the main administrative office of each department of France.

This edifice is in part classified as Historic Monument.

It is indexed in the base Mérimée, a database of the French architectural patrimony maintained by the French Ministry of Culture.

MICCAI Welcome cocktail will take place in the very elegant reception rooms of this Palace.

Please wear your delegate badge during the cocktail.



Wednesday 3 October, 2012

18:15 - 22:30 Visit and Gala Dinner (Oceanographic Museum of Monaco)

The Gala Dinner will be held at the Oceanographic Museum of Monaco.
Food and beverages selected and prepared by FAUCHON Caterering will be available during the visit at different levels of the building.

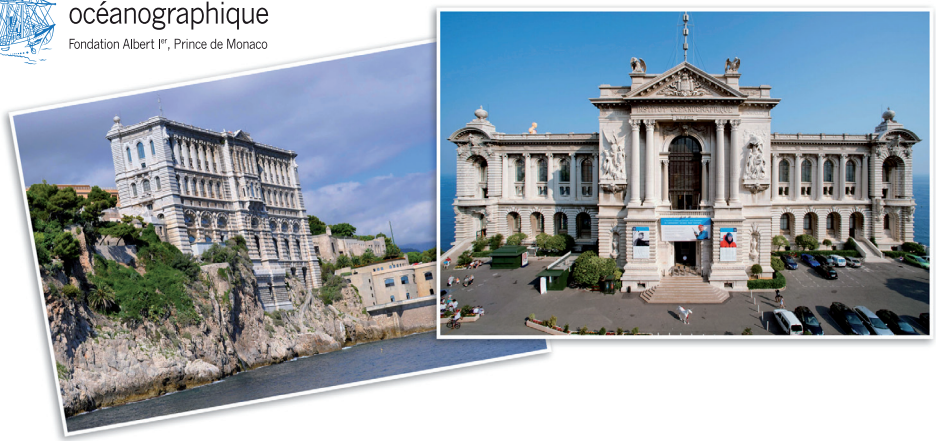
With a world-renowned expertise, the Museum presents over 6,000 specimens of fish in their natural environment faithfully recreated. In one place you will discover the amazing species of the Mediterranean Sea, the incredible diversity of inhabitants of a living coral reef, and the monumental shark lagoon of 400,000 liters.

The museum is currently devoting a **major exhibition** to the English artist, Marc Quinn.
For the occasion, a great many works - paintings, sculptures and installations - will be on display in the rooms of the Museum, in the big square in front of the Museum and on the panoramic terrace.

The Oceanographic Museum of Monaco is a partner of the MICCAI 2012 Conference.

The transfer to the Oceanographic Museum of Monaco will depart from Nice Acropolis from 5:15 pm till 5:30pm. Transfer back to Nice Acropolis is from 10:00 pm.
Please wear your delegate badge at all times. Access by voucher and badge.

Institut
océanographique
Fondation Albert Ier, Prince de Monaco



Thursday 4 October, 2012

19:00 - 23:00 Bowling Game (next to Acropolis Center)

There will be a free & friendly Bowling competition on the last night of the main conference in the Warm'up Bowling which is located next to the Acropolis Convention Center. Registration is possible on the MICCAI website.

Saturday 6 October, 2012

09:00 - 18:00 Grasse perfumes and local specialities trip

A student organized trip for all MICCAI visitors. See MICCAI website for registration.

PROGRAM OVERVIEW

Sunday 30 September 2012

17:00 - 19:00 Pre-paid registration

Monday 1 October 2012

Workshops/Tutorials/Challenges

07:30 - 21:30 Registration
09:00 - 17:30 **17 Workshops, Tutorials and Challenges**

Special Events

18:00 - 19:30 **Student career event**
19:30 - 21:00 **Get together party**

Tuesday 2 October 2012

MICCAI Conference Day 1

07:00 - 18:00 Registration
08:45 - 09:30 **Opening Ceremony : N. Ayache, M. Cosnard, A. Carpentier**
09:30 - 10:30 **Keynote : J. Marescaux**, Surgery for Life Innovation: Information Age and Robotics
10:30 - 11:00 Coffee break
11:00 - 12:30 **Plenary Session 1**: Abdominal Imaging, Computer Assisted Interventions & Robotics
12:30 - 13:30 Lunch
13:30 - 15:00 **Poster Session 1**
15:00 - 16:30 **Poster Session 2**
16:30 - 18:00 **Plenary Session 2:** Brain Imaging: Structure, Function & Disease Evolution
19:00 - 20:30 **Welcome Cocktail** at Palais Sarde (Nice)

Wednesday 3 October 2012

MICCAI Conference Day 2

08:00 - 18:00 Registration
08:45 - 09:00 Welcome
09:00 - 10:30 **Plenary Session 3:** Cardiovascular Imaging: Planning, Intervention & Simulation
10:30 - 11:00 Coffee break
11:00 - 12:00 **Keynote : M. Haïssaguerre**, Preventing Sudden Cardiac Death: Role of Structural and Functional Imaging
12:00 - 13:00 Lunch
13:00 - 14:30 **Poster Session 3**
14:30 - 16:00 **Poster Session 4**
16:00 - 17:00 **Plenary Session 4:** Image Registration: New Methods and Results
18:15 - 22:30 **Visit and Gala Dinner** (Oceanographic Museum of Monaco)

Thursday 4 October 2012

MICCAI Conference Day 3

08:00 - 18:00 Registration
09:00 - 09:15 Welcome
09:15 - 10:30 **Plenary Session 5:** Diffusion Weighted Imaging: Acquisition to Tractography
10:30 - 11:00 Coffee break
11:00 - 12:30 **Plenary Session 6:** Image Acquisition, Segmentation & Recognition
12:30 - 13:30 Lunch
13:30 - 15:00 **Poster Session 5**
15:00 - 16:30 **Poster Session 6**
16:30 - 17:30 **Plenary Session 7:** Microscopic Image Analysis
17:30 - 18:30 **Award Ceremony**
18:30 - 18:45 **Closing Ceremony**

Friday 5 October 2012

Workshops/Tutorials/Challenges

08:00 - 18:00 Registration
09:00 - 17:30 **15 Workshops, Tutorials and Challenges**

CONFERENCE FORMAT AND GUIDELINES

Podium Presentation (Apollon Amphitheatre)

Each presentation will be allocated a 13 minute slot. Actual presentations must not exceed 10 minutes leaving 3 minutes for questions. Timing will be strictly enforced, so it is strongly advised to rehearse beforehand.

The preferred formats are PowerPoint and Adobe PDF. Computers with Windows 7 and Microsoft Office 2010 will be available for the podium presentations. Presenters should preferably use the conference system and not their own laptop to minimize setup time. Keynote presentations available on Mac are not recommended as they would be converted into Powerpoint format.

Podium presentations will also have an associated poster presentation of 90 minutes, therefore additional details can be given at that time.

Speaker Ready Room

We request that each presenter upload their presentation as early as possible on the conference computer system. The Speaker Ready Room is located just behind the Welcome Area, on level 1 of the Acropolis Convention Center.

We suggest bringing a copy of all files including movies on a USB key. If you are including videos in your presentation it is highly recommended you use a standard codec such as Microsoft Video 1 to avoid playback issues.

Poster Presentation (Agora 3 and Muses rooms)

Scheduling

Posters will stay up throughout the entire conference. The conference will supply materials for mounting the posters. They can be mounted on Monday October 1st from 16:00 or Tuesday October 2nd from 8:00 before the conference starts. They have to be withdrawn on Thursday October 4th from 17:00. Non-withdrawn posters will be thrown away.

Video Screen

In addition to normal poster displays, each poster presenter will have an exclusive access to a large screen (42 inches, VGA connector) during the 90 minutes of the corresponding poster session.

The authors must **bring their own laptop** to show interactive additional material (Powerpoint presentation, video or software demonstration).

Poster Tour

A poster tour lead by the Poster Session Chairs will be organized during each poster session. Presenters should provide a 4mn overview of their poster to the session chairs at that occasion.

Poster Identifier

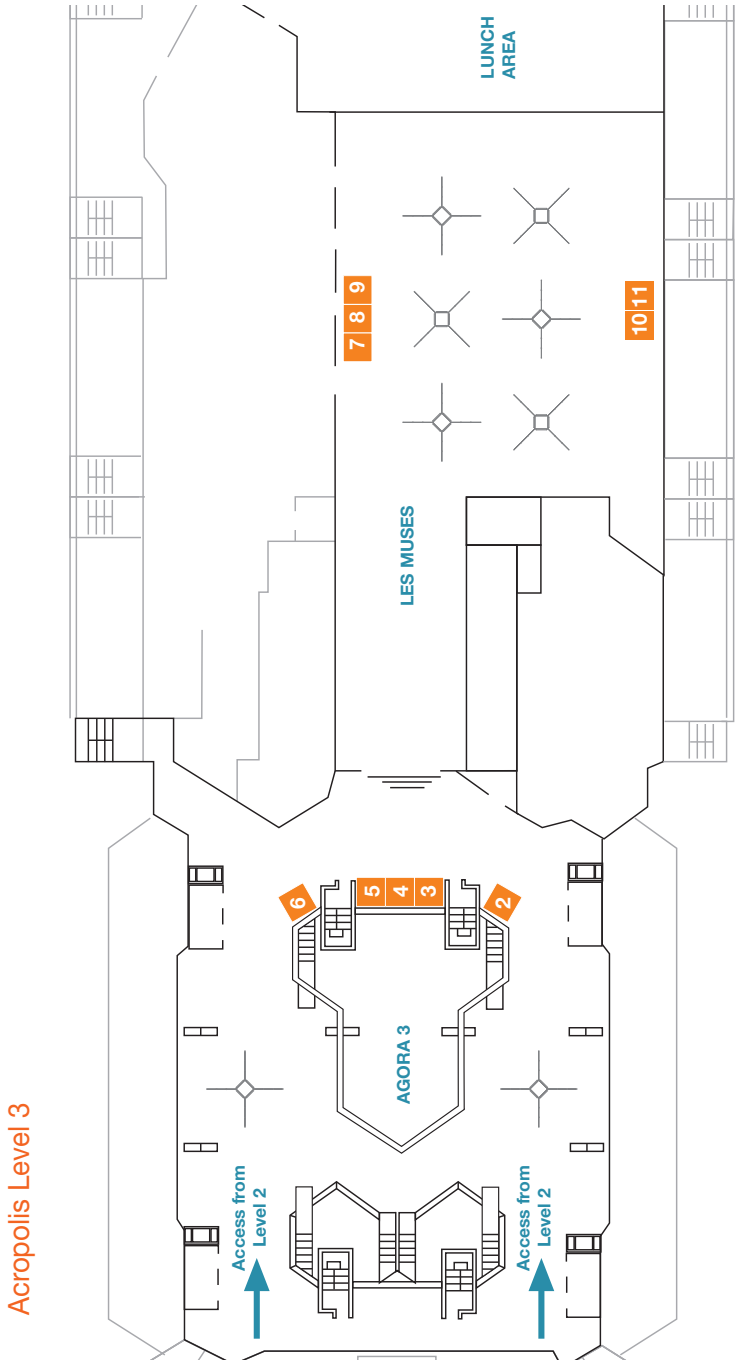
Each poster has a unique identifier, which is available from the Conference Program. It describes the presentation day (Tu, We or Th), the poster session of that day (1 or 2), and the location identifier consisting of the room name (Ag for Agora or Mu for Muses) and a number (1 to 42).

Please refer to the rooms' layout.

MICCAI EXHIBITORS

Company	Booth Number
Claron Technology Inc	11
Elsevier	6
Inria	8
NDI	4
Philips	9
Politecmed	10
Siemens	7
Springer/LNCS	2
Ultrasonix	3
VSG Visualization Sciences Group	5

EXHIBITION FLOOR PLAN



List of exhibitors and floor plans at the date of printing (20th September 2012).
All company names and logos included in the final programme were provided by the exhibitors and are under their responsibility.

ORGANIZER

INRIA

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Inria is is the only French public research body fully dedicated to computational sciences.
Working at the crossroads of computer sciences and mathematics, Inria's 3,500 researchers have been developing the scientific foundations for a new field of learning: computational sciences.

When associated with other scientific disciplines, computational sciences can be used to offer new concepts, languages, methods and teaching aids which open up new avenues for exploration and understanding of complex phenomena. Working in project-teams, Inria researchers mix fundamental and applied research in an innovative blend to produce their results.

The researchers at Inria published over 4,400 articles in 2011. They are behind over 255 active patents and 107 start-ups. In 2011, Inria's budget came to 265 million euros, 25% of which represented its own resources.

PARTNERS

MICCAI

Institut océanographique
Fondation Albert Ier, Prince de Monaco

Région Provence Alpes Côte d'Azur

NICE CÔTE D'AZUR

GOLD SPONSORS

GENERAL ELECTRIC

Company Name: GE Healthcare
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Contact person: April Khademi
Phone number: +1 416 889 2737
Fax number: +1 416 352 5174
E-mail: picoe.info@ge.com
Web site: www.gehealthcare.com

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost.

PHILIPS

PHILIPS

Company Name: Philips
Address: High Tech Campus 34, 5656 AE Eindhoven, Netherlands
Contact Person: Research Communication
Phone Number: +31 40 27 46616
Email: research.communication@philips.com
Web site: www.research.philips.com

Philips Research is one of the world's largest corporate research organizations and has a rich history of producing successful innovations in the areas of healthcare, lifestyle and lighting. Powered by the intellect and hard work of more than 1,600 talented individuals, Philips Research fuels value creation and growth in Philips by creating new technologies that will improve people's lives. Philips Research has research facilities in Germany, The Netherlands, the United Kingdom, India, USA and China.

SIEMENS

SIEMENS

Company Name: Siemens Corporation, Corporate Research and Technology
Address: 755 College Road East, 08540 Princeton, USA
Contact person: Caroline Joiner
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Fax number: +1 609-734-3622
E-mail: Carolyn.joiner@siemens.com
Web site: www.usa.siemens.com/research

Siemens Corporate Research and Technology is Siemens' largest research and development center outside Europe. Founded in 1977, its nearly 300 research scientists, engineers, and technology experts provide technological solutions to the global family of Siemens' businesses and work closely with Siemens' customers, government agencies, universities, and other organizations.

CANON - MEDIAN

Company Name: MEDIAN Technologies
Address: WTC Les Deux Arcs
1800, Route des Crêtes, 06 560 Valbonne, France
Contact Person: Emmanuelle Leygues
Phone Number: + 33 4 93 333 777
Fax Number: + 33 4 92 90 65 99
E-mail: emmanuelle.leygues@mediantechnologies.com
Web site: www.mediantechnologies.com

Company Name: Canon Inc.
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Contact person: Hiroyuki Yamamoto
Phone number: (81)3-3758-2111
E-mail: yamamoto.hiroyuki125@canon.co.jp
Web site: http://www.canon.com

Canon Inc., headquartered in Tokyo, Japan, is a leader in professional and consumer imaging equipment and information systems. Canon's product range includes copying machines, inkjet and laser printers, cameras, video equipment, medical equipment, and semiconductor-manufacturing equipment.
MEDIAN Technologies provides advanced medical imaging products and services for diagnosing and monitoring cancer patients in both routine clinical practice and clinical drug development. MEDIAN has developed a strong scientific and technological expertise in algorithmic sciences applied to image processing, as well as a large technology core, to enable the design, implementation, and validation of advanced imaging biomarkers.
Canon Inc. and MEDIAN Technologies are engaged in a long term partnership to co-develop and bring to market, Computer-Aided Diagnosis/Detection (CAD) imaging products and services.

SILVER SPONSORS

BRONZE SPONSORS

HONORED GUEST OF MICCAI 2012

Professor Alain Carpentier

Prof. Alain Carpentier, President of the French Academy of Sciences, is the Honored Guest of MICCAI 2012 for his pioneering and visionary work in several of the domains covered by MICCAI.

Considered as «the father of modern mitral valve repair», cardiac surgeon Alain Carpentier developed the world's first artificial valve used in clinical practice, which currently benefits more than 100,000 patients each year.

Prof. Carpentier performed the first complex open heart surgery with video assistance in 1996, the first computer assisted open heart operation in 1998, and has been promoting the development of a fully implantable artificial heart.

In the early 2000s, Alain Carpentier also collaborated with Inria researchers to improve the planning of robotized heart surgery, and to introduce augmented reality methods in coronary bypass surgery.

Prof. Carpentier has received many prestigious awards. In 2007 in New York, he received the Albert Lasker Prize, awarded annually since 1946 to living persons who have made major contributions to medical science (eighty Lasker laureates have received the Nobel Prize). In 2011 at Harvard Medical School, he received the 2011 Warren Alpert Foundation Prize, in recognition of his extraordinary contributions to medicine and innovations in bioengineering.

As the Honored Guest and President of the French Academy of Sciences, Professor Carpentier will address the audience of MICCAI 2012 during the opening ceremony and will introduce the keynote lecture of Professor Haïssaguerre the following day.

KEYNOTE LECTURER

Professor Jacques Marescaux

Professor Marescaux MD, Hon. FRCS – Hon FJSES - FACS, is Chief of digestive surgery Department of University of Strasbourg Hospital and president and founder of IRCAD. He is also founder and Chief Executive Officer of the newly created IHU-Strasbourg, a center of excellence aiming at developing Image Guided Minimally Invasive Surgery and fostering technology transfer.
J. Marescaux began his academic career as a researcher at INSERM in the fields of cell biology and experimental surgery. At the age of 32, he was appointed Professor of Digestive Surgery and rapidly built a track record of achievement. In the early 1990's, Prof. Marescaux was one of the first to recognize that the field of surgery was shifting – from the industrial era to the information era and from open procedures to minimally invasive techniques. With strong support from private partners, he created IRCAD, a uniquely structured institute to advance the field of surgery into the information era. In 1994, IRCAD opened on the grounds of the University of Strasbourg Hospital. Since its creation, IRCAD has gained world renown as a leading institute for surgical research and education.

Since its creation, IRCAD has 2495 international publications and communications. The institute has been honored with many prestigious international awards, including: Computerworld Smithsonian Award (Washington - 1999), Computerworld Honors Award (Washington - 2002), Excel Award and World Summit Award (Geneva – 2003), Robotics Award (Osaka – 2004), Gimbernat Award (Barcelona 2009), Georges Berci Lifetime Achievement Award (Washington 2010).

In 2001, Prof. Marescaux, sitting at a robotic console in New York City, performed the first transcontinental laparoscopic surgery on a patient in Strasbourg France, proving that distances were no longer an obstacle in surgery [Nature 2001, 41]. IRCAD has focused research efforts on the development of less invasive surgical techniques. The creation of new concepts and instruments enabled the IRCAD team to carry out the first fully natural orifice transluminal endoscopy surgical (NOTES) procedure in April 2007.

EITS was founded by Prof. Marescaux as a training facility to disseminate the ground breaking work at IRCAD. Over the last 16 years this center has gained international acclaim by training more than 38,000 surgeons from 124 countries. The demand for EITS training has driven the creation of mirror IRCAD institutes in Taiwan and Brazil.

Professor Marescaux has been recognized worldwide for his contribution to surgery. His work has been reflected in major publications, membership in every important surgical organization, honorary degrees from the Universities, position in many Editorial Boards and honorary fellowship in the Royal College of Surgeons (London) and the Japanese society of endoscopic surgery.

Keynote «Surgery for Life Innovation: Information Age and Robotics»

Keynote «Surgery for Life Innovation: Information Age and Robotics»
Introducing an optical device into the abdomen of a patient so as to carry out the surgical procedure via a miniaturized camera, represented the major change the surgical world experienced throughout the 20th century : the «minimally invasive» surgery era was born. Recent decades saw amazing progress in such minimal access procedures that replace radical surgical resections. Unfortunately, minimally invasive techniques were developed by separate and distinct specialties and are inevitably limited by the expertise of individual specialists such as surgeons, radiologists and gastroenterologists.

In parallel, medicine entered the world of computer sciences via great revolutions among which 3D medical imaging (CT, MRI and ultrasound) is surely the most obvious. Digitalisation of patient own data is nowadays present in all fields, from anatomy to the surgical intervention.

This ever growing data flow remains however difficult to interpret and to exploit. This is the objective of computerized post-processing. Interpretation consists in extracting from the signal (image or other) the information useful for diagnosis, therapeutic choice or medical treatment. In order to be understandable, this information has to be quickly, reliably and clearly translated and given to practitioners, by exploiting the principles of virtual reality. Useful information is thus mainly recreated as 3D images.

Beyond diagnosis support, this data exploitation can allow to plan and simulate an intervention preoperatively. These two preoperative steps can be used intra-operatively thanks to the development of augmented reality (AR) which consists in superimposing the pre-operative 3D models of the patient onto the real intra-operative view of the patient. This awaited technique is however currently not available for soft tissue surgery essentially due to large intraoperative deformations and topological changes of organs resulting from surgeon interactions.

A last major medical innovation is robotic surgery. Developed to improve surgical gesture precision and efficiency, existing robots are essentially telemanipulators. Steering articulated arms reproducing all motions under control, the surgeon is able to perform operations from a distance, sitting in a comfortable seat, with no risk to make any awkward movement due to trembling or to a brusque gesture. But as for augmented reality, automatic control remains today not available due to huge difficulties to predict, analyse or control organ deformations and to adjust in real-time the robotic movements.

The evolution of surgery thus needs a revolution to overcome all these current limits. This revolution will consist in combining the best aspects of minimally invasive techniques from separate specialties, image analysis techniques, patient-specific simulation, augmented reality and robotics. The resulting approach will lead to Image-Guided Minimally Invasive Hybrid Surgery.

The evolution of surgery to incorporate image guidance, computer assistance, robotic augmentation and telecommunications will require a paradigm shift in the training of physicians, engineers, and other healthcare workers. The classic boundaries between medical, surgical and radiological disciplines must be reorganized to produce multidisciplinary teams who are proficient in all tools relevant to patients. It is a challenge but it will lead to the future of surgery.

KEYNOTE LECTURER

Professor Michel Haïssaguerre

Born in Bayonne, France, in 1955, **Prof. Michel Haïssaguerre** graduated in medicine in 1982 and specialized in cardiology in 1984. He became assistant-professor in 1988 at the University. He became a Professor of Cardiology in 1994 and he currently teaches at the Hôpital Cardiologique du Haut-Lévêque, Bordeaux- Pessac.

His scientific and clinical work focuses on cardiovascular electrophysiology, particularly on cardiac fibrillation. He is best known for his remarkable contributions in the area of atrial fibrillation ablation. He was the first to detect the importance of pulmonary vein triggers and drivers in the genesis of atrial fibrillation. In addition, he was first to propose the technique of pulmonary vein isolation, which underlies current methods used throughout the world for atrial fibrillation cure. His team has also demonstrated that Purkinje cells were the main triggers of human ventricular fibrillation, with or without heart disease.

M.Haïssaguerre has published more than 460 publications in the leading peer-reviewed cardiology journals dealing mainly with radiofrequency current endocardial ablation of tachyarrhythmias. He serves on the editorial boards of many major journals of cardiology, including European Heart Journal, Circulation Arrhythmia, Europace, The Journal of Cardiovascular Electrophysiology, Journal of Interventional Cardiology, Heart Rhythm, and Pacing and Clinical Electrophysiology: PACE.

Michel Haïssaguerre enjoys an outstanding national and international scientific reputation. He has received numerous honors and awards, including the Prix Robert Debré (1982), the Prix de l'Information Cardiologique (1990), the Prix Ela Medical (1992), the Nylin Swedish Prize (2002), the Best Scientist Award Grüntzig 2003 (European Society of Cardiology), the Pioneer in Cardiac Electrophysiology award 2004 by the North American Society of Pacing and Electrophysiology (NASPE) – currently the Heart Rhythm Society, and the Mirowski Award 2009 for excellence in clinical cardiology and electrophysiology.

In 2010, he received the Lefoulon-Delalande Prize (Institut de France), the Louis Jeantet Prize for Medicine (Switzerland), and became a member of the Académie des Sciences; and the Distinguished Scientist Golden Lionel prize (Italy) was awarded to him in 2011. Eight of recipients of Louis Jeantet Prize have obtained later the Nobel Prize.

Keynote «Preventing Sudden Cardiac Death: Role of Structural and Functional Imaging»

Sudden cardiac death is responsible for 350 000 deaths each year in Europe, almost 1 000 every day, equivalent to the cumulative mortality of the three most lethal cancers (breast, lung and colon-rectal). This hecatomb is often likened to a natural death by 'heart attack' or «cardiac arrest». It is in 50-80 % of the cases linked to an arrhythmia instantly lethal: a real electric «tornado» termed ventricular fibrillation.

This devastating arrhythmia can be bound to a myocardial infarction but mainly concerns individuals with a healthy or slightly altered heart. It leads to the immediate death of the individual in the absence of cardiac massage and electric shock delivered by a defibrillator. The source cells generating the triggering impulses come from the Purkinje network: a tiny fraction (2 %) of the cardiac mass. Their responsibility has been proved by local thermo-ablation eliminating the arrhythmia. The identification of the vulnerable subjects is the fundamental problem in the reduction of this pathology, and a major scientific challenge.

Role of Structural (MRI) and Functional Imaging
In the current era, non-invasive diagnostic tools have improved patient-care by providing valuable and unprecedented guidance in the therapeutic management of several cardiac and non-cardiac disorders. Many of these modalities have replaced the invasive imaging techniques as gold standards (eg. MRI or CT have largely replaced cardiac catheterization in congenital heart problems).

Cardiac MRI not only provides the information at the organ level but also at the myocardial tissue level. Delayed enhancement of the myocardium with gadolinium has been shown to represent electrically silent fibrotic tissue laid into the interstitial platform holding the syncytia of electrically active atrial and ventricular cells. The tissue structure information like myocardial scar and fibrosis can thus be imaged non-invasively, today.

More recently, a novel use of diffusion MR called track density imaging has been able to reveal the 3D arrangement of fibres within the ventricular syncytium and differentiate healthy muscle fibres (long continuous strands) from those surviving within the scar or at its borderzone (broken strands). The later are considered to form an arrhythmogenic substrate and generate the so called 'late potentials' during sinus rhythm. Thus, they are very valuable targets of VT ablation.

Non invasive mapping: Besides non-invasive structural imaging of the heart tissue, the imaging of normal and abnormal cardiac bioelectric function can also be accomplished, non-invasively. After several decades of ongoing research, electrocardiographic mapping (ECM), a novel three dimensional, 252-lead, body surface ECG based tool has been developed as a non-invasive epicardial imaging modality. This technique images potentials, electrograms and activation sequences (isochrones) on the epicardial surface of the heart. This tool has been investigated in the normal cardiac electrophysiology and various tachyarrhythmic, conduction and anomalous depo-repolarization disorders. It has been emerging as a tool of substantially higher clinical value than the 12-lead ECG providing better sensitivity, specificity and accuracy in the management of cardiac rhythm disorders.

CONFERENCE PROGRAM

Tuesday 2 October 2012

07:00 - 18:30 **Registration**

08:45 - 09:30 **Opening Ceremony**
Nicholas Ayache (General Chair of MICCAI 2012)
Michel Cosnard (CEO of Inria),
Alain Carpentier (President of French Academy of Sciences & Honored Guest)

09:30 - 10:30 **Keynote Lecture 1**
Jacques Marescaux, IHU Strasbourg
Surgery for Life Innovation: Information Age and Robotics,

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

11:00 - 12:30 **Plenary Session 1: Abdominal Imaging, Computer Assisted Interventions & Robotics**
Chairs: **David Hawkes & Russ Taylor**

Reliable assessment of perfusivity and diffusivity from diffusion imaging of the body
Moti Freiman, Stephan Voss, Robert Mulkern, Jeannette Perez-Rossello, Michael Callahan, Simon K. Warfield, *Children's Hospital Boston, Harvard Medical School* (Th-2-MU-33, I-1)

Multi-organ Abdominal CT Segmentation using hierarchically weighted Subject-specific Atlases
Robin Wolz, Chengwen Chu, Kazunari Misawa, Kensaku Mori, Daniel Rueckert, *Imperial College London, Nagoya University, Aichi Cancer Center* (Tu-2-MU-17, I-10)

Radiation-Free Drill Guidance in Interlocking of Intramedullary Nails
Benoit Diotte, Pascal Fallavollita, Lejing Wang, Simon Weidert, Peter-Helmut Thaller, Ekkehard Euler, Nassir Navab, *Technische Universität München, Ludwig Maximilian Universität München* (Tu-2-AG-01, I-18)

Developing Essential Rigid-Flexible Outer Sheath to Enable Novel Multi-Piercing Surgery
Siyang Zuo, Takeshi Ohdaira, Kenta Kuwana, Yoshihiro Nagao, Satoshi Ieiri, Makoto Hashizume, Takeyoshi Dohi, Ken Masamune, *University of Tokyo, Kyushu University Hospital* (Tu-2-AG-02, I-26)

Surgical Gesture Classification from Video Data
Benjamin Bejar, Luca Zappella, Rene Vidal, *Johns Hopkins University* (Tu-2-AG-03, I-34)

Remote Ultrasound Palpation for Robotic Interventions using Absolute Elastography
Caitlin Schneider, Ali Baghani, Robert Rohling, Tim Salcudean, *University of British Columbia* (Tu-2-AG-04, I-42)

12:30 - 13:30 **Lunch**

13:30 - 15:30 **Open coffee**

13:30 - 15:00 **Poster Session 1 :**
- Computer-aided Diagnosis and Planning I
- Image Reconstruction and Enhancement
- Analysis of Microscopic and Optical Images I

15:00 - 16:30 **Poster Session 2 :**
- Computer-Assisted Interventions & Robotics I
- Image Segmentation I
- Cardiovascular Imaging I

16:30 - 18:00 **Plenary Session 2: Brain Imaging: Structure, Function & Disease Evolution**
Chairs: **Rachid Deriche & Daniel Rueckert**

Tractometer: Online evaluation system for tractography
Marc-Alexandre Côté, Arnaud Boré, Gabriel Girard, Jean-Christophe Houde, Maxime Descoteaux, *University of Sherbrooke* (We-1-MU-34, I-699)

A Novel Sparse Graphical Approach for Multimodal Brain Connectivity Inference
Bernard Ng, Gael Varoquaux, Jean-Baptiste Poline, Bertrand Thirion, *INRIA Saclay, CEA* (We-1-MU-17, I-707)

From Brain Connectivity Models to Identifying Foci of a Neurological Disorder
Archana Venkataraman, Marek Kubicki, Polina Golland, *Massachusetts Institute of Technology, Harvard Medical School* (We-1-MU-18, I-715)

Deriving statistical significance maps for SVM based image classification and group comparisons
Bilwaj Gaonkar, Christos Davatzikos, *University of Pennsylvania* (We-1-MU-19, I-723)

Analysis of Longitudinal Shape Variability via Subject Specific Growth Modeling
James Fishbaugh, Marcel Prastawa, Stanley Durrleman, Joseph Piven, Guido Gerig, *University of Utah, INRIA/ICM Pitié Salpétrière Hospital, University of North Carolina* (We-1-MU-20, I-731)

Regional flux analysis of longitudinal atrophy in Alzheimer´s disease
Marco Lorenzi, Nicholas Ayache, Xavier Pennec, *ADNI, INRIA Sophia Antipolis, Istituto San Giovanni di Dio Fatebenefratelli* (We-1-MU-21, I-739)

19:00 - 20:30 **Welcome Cocktail at Palais Sarde (Nice)**

Wednesday 3 October 2012

08:00 - 18:00 **Registration**

08:45 - 09:00 **Welcome**

09:00 - 10:30 **Plenary Session 3: Cardiovascular Imaging: Planning, Intervention and Simulation**
Chairs: **Leon Axel & Wiro Niessen**

Automatic Multi-Model-Based Segmentation of the Left Atrium in Cardiac MRI Scans
Dominik Kutra, Axel Saalbach, Helko Lehmann, Alexandra Groth, Sebastian Dries, Martin W. Krueger, Olaf Dössel, Jürgen Weese, *Philips Research Laboratories Hamburg, Karlsruhe Institute of Technology* (We-2-MU-17, II-1)

Curvilinear structure enhancement with the polygonal path image - Application to guide-wire segmentation in Xray fluoroscopy
Vincent Bismuth, Regis Vaillant, Hugues Talbot, Laurent Najman, *University Paris Est, General Electric Healthcare* (We-2-MU-28, II-9)

Catheter Tracking via Online Learning for Dynamic Motion Compensation in Transcatheter Aortic Valve Implantation
Peng Wang, Yefeng Zheng, Matthias John, Dorin Comaniciu, *Siemens Corporation, Corporate Research and Technology, Siemens AG Healthcare Sector* (We-2-MU-29, II-17)

Evaluation of a Real-time Hybrid Three-dimensional Echo and X-ray Imaging System for Guidance of Cardiac Catheterisation Procedures
James Housden, Aruna Arujuna, YingLiang Ma, Niels Nijhof, Geert Gijsbers, Roland Bullens, Mark O'Neill, Michael Cooklin, Aldo Rinaldi, Jaswinder Gill, Stam Kapetanakis, Jane Hancock, Martyn Thomas, Reza Razavi, Kawal Rhode, *King's College London, Guy's and St. Thomas' NHS Foundation Trust, Philips Healthcare* (We-2-MU-30, II-25)

LBM-EP: Lattice-Boltzmann Method for Fast Cardiac Electrophysiology Simulation from 3D Images
Saikiran Rapaka, Tommaso Mansi, Bogdan Georgescu, Mihaela Pop, Graham Wright, Ali Kamen, Dorin Comaniciu, *Siemens Corporation, Corporate Research and Technology, University of Toronto* (We-2-MU-18, II-33)

Cardiac Mechanical Parameter Calibration based on the Unscented Transform
Stéphanie Marchesseau, Hervé Delingette, Maxime Sermesant, Kawal Rhode, Simon Duckett, Aldo Rinaldi, Reza Razavi, Nicholas Ayache, *INRIA Sophia Antipolis, King's College London, St Thomas Hospital* (We-2-MU-19, II-41)

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

11:00 - 12:00 **Keynote Lecture 2,** introduced by Alain Carpentier:
Michel Haïssaguerre, IHU Bordeaux
Preventing Sudden Cardiac Death: Role of Structural and Functional Imaging

12:00 - 13:00 **Lunch**

13:00 - 15:00 **Open coffee**

13:00 - 14:30 **Poster Session 3**
- Image Registration I
- NeuroImage Analysis I
- Diffusion Weighted Imaging

14:30 - 15-00 **Poster Session 4**
- Image Segmentation II
- Cardiovascular Imaging II
- Computer-Assisted Interventions & Robotics II

16:00 - 17:00 **Plenary Session 4: Image Registration: New Methods and Results**
Chairs: **Josien Pluim & Mert Sabuncu**

Registration accuracy: How good is good enough? A statistical power calculation incorporating image registration uncertainty
Eli Gibson, Aaron Fenster, Aaron D. Ward, *Robarts Research Institute, Lawson Health Research Institute, University of Western Ontario*
(Th-1-AG-01, II-643)

Joint Tumor Segmentation and Dense Deformable Registration of Brain MR Images
Sarah Parisot, Hugues Duffau, Stéphane Chemouny, Nikos Paragios, *Ecole Centrale Paris, INRIA Saclay, Intrasense SAS, Montpellier University Hospital* (Th-1-AG-14, II-651)

Registration using Sparse Free-form Deformations
Wenzhe Shi, Xiahai Zhuang, Luis Pizarro, Wenjia Bai, Haiyan Wang, Kai-Pin Tung, Philip Edwards, Daniel Rueckert, *Imperial College London, Shanghai Advanced Research Institute*
(Th-1-AG-02, II-659)

Registration of 3D fetal brain US and MRI
Maria Kuklisova-Murgasova, Amalia Cifor, Raffaele Napolitano, Aris Papageorghiou, Gerardine Quaghebeur, J. Alison Noble, Julia A. Schnabel, *University of Oxford, John Raddcliffe Hospital*
(Th-1-AG-03, II-667)

17:15 - 17:30 **Departure of buses to Monaco**

18:15 - 22:30 **Visit and Gala Dinner (Oceanographic Museum of Monaco)**

22:00 - 22:30 **Departure of buses to Nice**

Thursday 4 October 2012

08:00 - 18:00 **Registration**

09:00 - 09:15 **Welcome**

09:15 - 10:30 **Plenary Session 5: Diffusion Weighted Imaging : From Acquisition to Tractography**
Chairs: **Thomas Fletcher & Bertrand Thirion**

Accelerated Diffusion Spectrum Imaging with Compressed Sensing using Adaptive Dictionaries
Berkin Bilgic, Kawin Setsompop, Julien Cohen-Adad, Van Wedeen, Lawrence L. Wald, Elfar Adalsteinsson, *Massachusetts Institute of Technology, A. A. Martinos Center for Biomedical Imaging, Harvard Medical School* (Th-2-MU-20, III-1)

Parametric Dictionary Learning for Modeling EAP and ODF in Diffusion MRI
Sylvain Merlet, Emmanuel Caruyer, Rachid Deriche, *INRIA Sophia Antipolis* (Th-2-MU-21, III-10)

Resolution Enhancement of Diffusion-Weighted Images by Local Fiber Profiling
Pew-Thian Yap, Dinggang Shen, *University of North Carolina* (Th-2-MU-22, III-18)

Geodesic Shape-based Averaging
Manuel Jorge Cardoso, Gavin P Winston, Marc Modat, Shiva Keihaninejad, John S Duncan, Sebastien Ourselin, *University College London* (Th-1-AG-15, III-26)

Multi-scale characterization of white matter tract geometry
Peter Savadjiev, Yogesh Rathi, Sylvain Bouix, Ragini Verma, Carl-Fredrik Westin, *Harvard Medical School, Brigham and Women's Hospital, University of Pennsylvania* (Th-MU-23, III-34)

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

11:00 - 12:30 **Plenary Session 6: Image Acquisition, Segmentation & Recognition**
Chairs: **Bjorn Menze & Alison Noble**

Optimization of Acquisition Geometry for Intra-operative Tomographic Imaging
Jakob Vogel, Tobias Reichl, José Gardiazabal, Nassir Navab, Tobias Lasser, *Technische Universität München, HelmholtzZentrum München* (Th-2-AG-01, III-42)

Incorporating Parameter Uncertainty in Bayesian Segmentation Models: Application to Hippocampal Subfield Volumetry
Juan Eugenio Iglesias, Mert Rory Sabuncu, Koen Van Leemput, *ADNI, A. A. Martinos Center for Biomedical Imaging, Technical University of Denmark, Aalto University* (Th-1-AG-16, III-50)

A Dynamical Appearance Model Based on Multiscale Sparse Representation: Segmentation of the Left Ventricle from 4D Echocardiography
Xiaojie Huang, Donald P Dione, Colin B Compas, Xenios Papademetris, Ben A. Lin, Albert J Sinusas, James S Duncan, *Yale University* (Th-2-AG-02, III-58)

Automatic Detection and Segmentation of Kidneys in 3D CT Images Using Random Forests
Rémi Cuingnet, Raphael Prevost, David Lesage, Laurent Cohen, Benoit Mory, Roberto Ardon, *Philips Research Medisys, Paris Dauphine University* (Th-2-AG-03, III-66)

Neighbourhood Approximation Forests
Ender Konukoglu, Ben Glocker, Darko Zikic, Antonio Criminisi, *Microsoft Research Cambridge* (Th-2-AG-04, III-75)

Recognition in Ultrasound Videos: Where Am I?
Roland Kwitt, Nuno Vasconcelos, Sharif Razzaque, Stephen Aylward, *Kitware Inc., University of California, San Diego, University of North Carolina* (Th-2-AG-05, III-83)

12:30 - 13:30 **Lunch**

13:30 - 15:30 **Open coffee**

13:30 - 15:00 **Poster Session 5**
- Image Registration II
- NeuroImage Analysis II
- Analysis of Microscopic and Optical Images II

15:00 - 16:30 **Poster Session 6**
- Image Segmentation III
- Diffusion Weighted Imaging II
- Computer-aided Diagnosis and Planning II

16:30 - 17:30 **Plenary Session 7: Microscopic Image Analysis**
Chairs: **Anne Martel & Dimitris Metaxas**

Structural-Flow Trajectories for Unravelling 3D Tubular Bundles
Katerina Fragkiadaki, Weiyu Zhang, Jianbo Shi, Elena Bernardis, *University of Pennsylvania* (Th-1-MU-41, III-631)

Phase Contrast Image Restoration Via Dictionary Representation of Diffraction Patterns
Hang Su, Zhaozheng Yin, Takeo Kanade, Seungil Huh, *Shanghai Jiaotong University, Missouri University of Science and Technology, Carnegie Mellon University* (Th-1-MU-39, III-615)

Context-Constrained Multiple Instance Learning for Histopathology Image Segmentation
Yan Xu, Jianwen Zhang, Eric I-Chao Chang, Maode Lai, Zhuowen Tu, *Beihang University, Microsoft Research Asia, University of California, Los Angeles, Zhejiang University* (Th-1-MU-40, III-623)

Online Blind Calibration of Non-Uniform Photodetectors: Application to Endomicroscopy
Nicolas Savoire, Barbara Andre, Tom Vercauteren, *Mauna Kea Technologies* (Th-1-MU-42, III-639)

17:30 - 18:30 **Award Ceremony**
Chairs: **James Duncan & Sébastien Ourselin**

18: 30 - 18:45 **Closing Ceremony**

POSTER SESSIONS

TUESDAY 2 OCTOBER POSTERS

Poster ID	Title	Author list	LNCS Pages
Poster Session 1: 13:30-15:00	Chairs : **Stéphane Cotin & Hidefumi Kobatake**		
	Computer-aided Diagnosis and Planning I		
Tu-1-AG-01	Modeling and Real-Time Simulation of a Vascularized Liver Tissue	Igor Peterlík, Christian Duriez, Stéphane Cotin	I-50
Tu-1-AG-02	Efficient Optic Cup Detection from Intra-image Learning with Retinal Structure Priors	Yanwu Xu, Jiang Liu, Stephen Lin, Dong Xu, Carol Y Cheung, Tin Aung, Tien Yin Wong	I-58
Tu-1-AG-03	Population-Based Design of Mandibular Plates Based on Bone Quality and Morphology	Habib Bousleiman, Christof Seiler, Tateyuki Iizuka, Lutz-Peter Nolte, Mauricio Reyes	I-66
Tu-1-AG-04	Thoracic Abnormality Detection with Data Adaptive Structure Estimation	Yang Song, Weidong Cai, Yun Zhou, Dagan Feng	I-74
Tu-1-AG-05	Domain Transfer Learning for MCI Conversion Prediction	Bo Cheng, Daoqiang Zhang, Dinggang Shen	I-82
Tu-1-AG-06	Simulation of Pneumoperitoneum for Laparoscopic Surgery Planning	J. Bano, A. Hostettler, S.A. Nicolau, S. Cotin, C. Doignon, H.S. Wu, M.H. Huang, L. Soler, J. Marescaux	I-91
Tu-1-AG-07	Incremental Kernel Ridge Regression for the Prediction of Soft Tissue Deformations	Binbin Pan, James J. Xia, Peng Yuan, Jaime Gateno, Horace H.S. Ip, Qizhen He, Philip K.M. Lee, Ben Chow, Xiaobo Zhou	I-99
Tu-1-AG-08	Fuzzy Multi-class Statistical Modeling for Efficient Total Lesion Metabolic Activity Estimation from Realistic PET Images	Jose George, Kathleen Vunckx, Elke Van de Casteele, Sabine Tejpar, Christophe M. Deroose, Johan Nuyts, Dirk Loeckx, Paul Suetens	I-107
Tu-1-AG-09	Structure and Context in Prostatic Gland Segmentation and Classification	Kien Nguyen, Anindya Sarkar, Anil K. Jain	I-115
Tu-1-AG-10	Quantitative Characterization of Trabecular Bone Micro-Architecture Using Tensor Scale and Muti-Detector CT Imaging	Yinxiao Liu, Punam K Saha, Ziyue Xu	I-124
Tu-1-AG-11	Genetic, Structural and Functional Imaging Biomarkers for Early Detection of Conversion from MCI to AD	Nikhil Singh, Angela Y. Wang, Preethi Sankaranarayanan, P. Thomas Fletcher, Sarang Joshi, ADNI	I-132
Tu-1-AG-12	Robust MR Spine Detection Using Hierarchical Learning and Local Articulated Model	Yiqiang Zhan, Dewan Maneesh, Martin Harder, Xiang Sean Zhou	I-141
Tu-1-AG-13	Spatiotemporal Reconstruction of the Breathing Function	D. Duong, D. Shastri, P. Tsiamyrtzis, I. Pavlidis	I-149
Tu-1-AG-14	A Visual Latent Semantic Approach for Automatic Analysis and Interpretation of Anaplastic Medulloblastoma Virtual Slides	Angel Cruz-Roa, Fabio González, Joseph Galaro, Alexander R. Judkins, David Ellison, Jennifer Baccon, Anant Madabhushi, Eduardo Romero	I-157
Tu-1-AG-15	Detection of Spontaneous Vesicle Release at Individual Synapses Using Multiple Wavelets in a CWT-Based Algorithm	Stefan Sokoll, Klaus Tönnies, Martin Heine	I-165

Poster ID	Title	Author list	LNCS Pages
Poster Session 1: 13:30-15:00	Chairs : **Christos Davatzikos & Yoshinobu Sato**		
Image Reconstruction and Enhancement			
Tu-1-AG-16	An Adaptive Method of Tracking Anatomical Curves in X-Ray Sequences	Yu Cao, Peng Wang	I-173
Tu-1-MU-17	Directional Interpolation for Motion Weighted 4D Cone-Beam CT Reconstruction	Hua Zhang, Jan-Jakob Sonke	I-181
Tu-1-MU-18	Accurate and Efficient Linear Structure Segmentation by Leveraging Ad Hoc Features with Learned Filters	Roberto Rigamonti, Vincent Lepetit	I-189
Tu-1-MU-19	Compensating Motion Artifacts of 3D In Vivo SD-OCT Scans	O. Müller, S. Donner, T. Klinder, I. Bartsch, A. Krüger, A. Heisterkamp, B. Rosenhahn	I-198
Tu-1-MU-20	Classification of Ambiguous Nerve Fiber Orientations in 3D Polarized Light Imaging	Melanie Dohmen, Markus Axer, David Gräßel, Julia Reckfort, Uwe Pietrzyk, Katrin Amunts, Timo Dickscheid	I-206
Tu-1-MU-21	Non-Local Means Resolution Enhancement of Lung 4D-CT Data	Yu Zhang, Guorong Wu, Pew-Thian Yap, Qianjin Feng, Jun Lian, Wufan Chen, Dinggang Shen	I-214
Tu-1-MU-22	Compressed Sensing Dynamic Reconstruction in Rotational Angiography	Hélène Langet, Cyril Riddell, Yves Trousset, Arthur Tenenhaus, Elisabeth Lahalle, Gilles Fleury, Nikos Paragios	I-223
Tu-1-MU-23	Bi-Exponential Magnetic Resonance Signal Model for Partial Volume Computation	Quentin Duché, Oscar Acosta, Giulio Gambarota, Isabelle Merlet, Olivier Salvado, Hervé Saint-Jalmes	I-231
Tu-1-MU-24	3D Lung Tumor Motion Model Extraction from 2D Projection Images of Mega-Voltage Cone Beam CT via Optimal Graph Search	Mingqing Chen, Junjie Bai, Yefeng Zheng, R. Alfredo C. Siochi	I-239
Tu-1-MU-25	Atlas Construction via Dictionary Learning and Group Sparsity	Feng Shi, Li Wang, Guorong Wu, Yu Zhang, Manhua Liu, John H. Gilmore, Weili Lin, Dinggang Shen	I-247
Tu-1-MU-26	Dictionary Learning and Time Sparsity in Dynamic MRI	Jose Caballero, Daniel Rueckert, Joseph V. Hajnal	I-256
Tu-1-MU-27	Joint Reconstruction of Image and Motion in MRI: Implicit Regularization Using an Adaptive 3D Mesh	Anne Menini, Pierre-André Vuissoz, Jacques Felblinger, Freddy Odille	I-264
Tu-1-MU-28	Sparsity-Based Deconvolution of Low-Dose Perfusion CT Using Learned Dictionaries	Ruogu Fang, Tsuhan Chen, Pina C. Sanelli	I-272
Tu-1-MU-29	Fast Multi-contrast MRI Reconstruction	Junzhou Huang, Chen Chen, Leon Axel	I-281
Tu-1-MU-30	Steady-state Model of the Radio-pharmaceutical Uptake for MR-PET	Stefano Pedemonte, Simon Arridge, Brian F. Hutton, Sebastien Ourselin	I-289

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We-2-MU-33	Assessment of Navigation Cues with Proximal Force Sensing During Endovascular Catheterization	Hedyeh Rafii-Tari, Christopher J. Payne, Celia Riga, Colin Bicknell, Su-Lin Lee, Guang-Zhong Yang	II-560
We-2-MU-34	Data-Driven Visual Tracking in Retinal Microsurgery	Raphael Sznitman, Karim Ali, Rogério Richa, Russell H. Taylor, Gregory D. Hager, Pascal Fua	II-568
We-2-MU-35	Real-time Motion Compensated Patient Positioning and Non-rigid Deformation Estimation Using 4-D Shape Priors	Jakob Wasza, Sebastian Bauer, Joachim Hornegger	II-576
We-2-MU-36	Semi-Automatic Catheter Reconstruction from Two Views	Matthias Hoffmann, Alexander Brost, Carolin Jakob, Felix Bourier, Martin Koch, Klaus Kurzidim, Joachim Hornegger, Norbert Strobel	II-584
We-2-MU-37	Feature Classification For Tracking Articulated Surgical Tools	Austin Reiter, Peter K. Allen, Tao Zhao	II-592
We-2-MU-38	Image-based Tracking of the Teeth for Orthodontic Augmented Reality	André Aichert, Wolfgang Wein, Alexander Ladikos, Tobias Reichl, Nassir Navab	II-601
We-2-MU-39	Intra-op Measurement of the Mechanical Axis Deviation: an Evaluation Study on 19 Human Cadaver Legs	Lejing Wang, Pascal Fallavollita, Alexander Brand, Okan Erat, Simon Weidert, Peter-Helmut Thaller, Ekkehard Euler, Nassir Navab	II-609
We-2-MU-40	Real-Time Quantitative Elasticity Imaging of Deep Tissue Using Free-Hand Conventional Ultrasound	Ali Baghani, Hani Eskandari, Weiqi Wang, Daniel Da Costa, Mohamed Nabil Lathiff, Ramin Sahebjavaher, Septimiu Salcudean, Robert Rohling	II-617
We-2-MU-41	A Comparative Study of Correspondence-search Algorithms in MIS Images	Gustavo A. Puerto, Gian-Luca Mariottini	II-625
We-2-MU-42	3D Reconstruction in Laparoscopy with Close-Range Photometric Stereo	Toby Collins, Adrien Bartoli	II-634

THURSDAY 4 OCTOBER POSTERS

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Th-1-AG-01	Registration Accuracy: How Good is Good Enough? A Statistical Power Calculation Incorporating Image Registration Uncertainty	Eli Gibson, Aaron Fenster, Aaron D. Ward	II-643
Th-1-AG-02	Registration Using Sparse Free-form Deformations	Wenzhe Shi, Xiahai Zhuang, Luis Pizarro, Wenjia Bai, Haiyan Wang, Kai-Pin Tung, Philip Edwards, Daniel Rueckert	II-659
Th-1-AG-03	Registration of 3D Fetal Brain US and MRI	Maria Kuklisova-Murgasova, Amalia Cifor, Raffaele Napolitano, Aris Papageorghiou, Gerardine Quaghebeur, J. Alison Noble, Julia A. Schnabel	II-667
Th-1-AG-04	Self-Similarity Weighted Mutual Information: A New Nonrigid Image Registration Metric	Hassan Rivaz, D. Louis Collins	III-91
Th-1-AG-05	Inter-Point Procrustes: Identifying Regional and Large Differences in 3D Anatomical Shapes	Karim Lekadir, Alejandro F. Frangi, Guang-Zhong Yang	III-99
Th-1-AG-06	Selection of Optimal Hyper-Parameters for Estimation of Uncertainty in MRI-TRUS Registration of the Prostate	Petter Risholm, Firdaus Janoos, Jennifer Pursley, Andriy Fedorov, Clare Tempany, Robert A. Cormack, William M. Wells III	III-107
Th-1-AG-07	Globally Optimal Deformable Registration on a Minimum Spanning Tree Using Dense Displacement Sampling	Mattias P. Heinrich, Mark Jenkinson, Michael Brady, Julia A. Schnabel	III-115
Th-1-AG-08	Unbiased Groupwise Registration of White Matter Tractography	Lauren J. O'Donnell, William Wells III, Alexandra J. Golby, Carl-Fredrik Westin	III-123
Th-1-AG-09	Regional Manifold Learning for Deformable Registration of Brain MR Images	Dong Hye Ye, Jihun Hamm, Dongjin Kwon, Christos Davatzikos, Kilian M. Pohl	III-131
Th-1-AG-10	Estimation and Reduction of Target Registration Error	Ryan D. Datteri, Benoît M. Dawant	III-139
Th-1-AG-11	A Hierarchical Scheme for Geodesic Anatomical Labeling of Airway Trees	Aasa Feragen, Jens Petersen, Megan Owen, Pechin Lo, Laura H. Thomsen, Mathilde M. W. Wille, Asger Dirksen, Marleen de Bruijne	III-147
Th-1-AG-12	Initialising Groupwise Non-rigid Registration Using Multiple Parts+Geometry Models	Pei Zhang, Pew-Thian Yap, Dinggang Shen, Timothy F. Cootes	III-156
Th-1-AG-13	An Efficient and Robust Algorithm for Parallel Groupwise Registration of Bone Surfaces	Martijn van de Giessen, Frans M. Vos, Cornelis A. Grimbergen, Lucas J. van Vliet, Geert J. Streekstra	III-164
Poster Session 5: 13:30-15:00	Chairs: **Christian Barillot & Guido Gerig**		
	NeuroImage Analysis II		
Th-1-AG-14	Joint Tumor Segmentation and Dense Deformable Registration of Brain MR Images	Sarah Parisot, Hugues Duffau, Stéphane Chemouny, Nikos Paragios	II-651
Th-1-AG-15	Geodesic Shape-based Averaging	M. Jorge Cardoso, Gavin Winston, Marc Modat, Shiva Keihaninejad, John Duncan, Sebastien Ourselin	III-26
Th-1-AG-16	Incorporating Parameter Uncertainty in Bayesian Segmentation Models: Application to Hippocampal Subfield Volumetry	Juan Eugenio Iglesias, Mert Rory Sabuncu, Koen Van Leemput, ADNI	III-50
Th-1-MU-17	Realistic Head Model Design and 3D Brain Imaging of NIRS Signals Using Audio Stimuli on Preterm Neonates for Intra-Ventricular Hemorrhage Diagnosis	Marc Fournier, Mahdi Mahmoudzadeh, Kamran Kazemi, Guy Kongolo, Ghislaine Dehaene-Lambertz, Reinhard Grebe, Fabrice Wallois	III-172
Th-1-MU-18	Hemodynamic-informed Parcellation of fMRI Data in a Joint Detection Estimation framework	L. Chaari, F. Forbes, T. Vincent, P. Ciuciu	III-180

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Th-1-MU-20	Metamorphic Geodesic Regression	Yi Hong, Sarang Joshi, Mar Sanchez, Martin Styner, Marc Niethammer	III-197
Th-1-MU-21	Eigenanatomy Improves Detection Power for Longitudinal Cortical Change	Brian Avants, Paramveer Dhillon, Benjamin M. Kandel, Philip A. Cook, Corey T. McMillan, Murray Grossman, James C. Gee	III-206
Th-1-MU-22	Optimization of fMRI-derived ROIs based on Coherent Functional Interaction Patterns	Fan Deng, Dajiang Zhu, Tianming Liu	III-214
Th-1-MU-23	Topology Preserving Atlas Construction from Shape Data without Correspondence Using Sparse Parameters	Stanley Durrleman, Marcel Prastawa, Julie R. Korenberg, Sarang Joshi, Alain Trouvé, Guido Gerig	III-223
Th-1-MU-24	Dominant Component Analysis of Electrophysiological Connectivity Networks	Yasser Ghanbari, Luke Bloy, Kayhan Batmanghelich, Timothy P.L. Roberts, Ragini Verma	III-231
Th-1-MU-25	Tree-Guided Sparse Coding for Brain Disease Classification	Manhua Liu, Daoqiang Zhang, Pew-Thian Yap, Dinggang Shen	III-239
Th-1-MU-26	Improving Accuracy and Power with Transfer Learning Using a Meta-analytic Database	Yannick Schwartz, Gaël Varoquaux, Christophe Pallier, Philippe Pinel, Jean-Baptiste Poline, Bertrand Thirion	III-248
Th-1-MU-27	Radial Structure in the Preterm Cortex; Persistence of the Preterm Phenotype at Term Equivalent Age?	A. Melbourne, G. S. Kendall, M. J. Cardoso, Roxanna Gunney, N. J. Robertson, N. Marlow, S. Ourselin	III-256
Th-1-MU-28	Temporally-Constrained Group Sparse Learning for Longitudinal Data Analysis	Daoqiang Zhang, Jun Liu, Dinggang Shen	III-264
Th-1-MU-29	Feature Analysis For Parkinson's Disease Detection Based on Transcranial Sonography Image	Lei Chen, Johann Hagenah, Alfred Mertins	III-272
Th-1-MU-30	Longitudinal Image Registration with Non-Uniform Appearance Change	Istvan Csapo, Brad Davis, Yundi Shi, Mar Sanchez, Martin Styner, Marc Niethammer	III-280
Th-1-MU-31	Cortical Folding Analysis on Patients with Alzheimer's Disease and Mild Cognitive Impairment	David M. Cash, Andrew Melbourne, Marc Modat, M. Jorge Cardoso, Matthew J. Clarkson, Nick C. Fox, Sebastien Ourselin	III-289
Th-1-MU-32	Inferring Group-wise Consistent Multimodal Brain Networks via Multi-View Spectral Clustering	Hanbo Chen, Kaiming Li, Dajiang Zhu, Tuo Zhang, Changfeng Jin, Lei Guo, Lingjiang Li, Tianming Liu	III-297
Th-1-MU-33	Test-retest Reliability of Graph Theory Measures of Structural Brain Connectivity	Emily L. Dennis, Neda Jahanshad, Arthur W. Toga, Katie L. McMahon, Greig I. de Zubicaray, Nicholas G. Martin, Margaret J. Wright, Paul M. Thompson	III-305
Th-1-MU-34	Registration and Analysis of White Matter Group Differences with a Multi-Fiber Model	Maxime Taquet, Benoît Scherrer, Olivier Commowick, Jurriaan Peters, Mustafa Sahin, Benoît Macq, Simon K. Warfield	III-313

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Th-1-MU-36	A Diffusion Model for Detecting and Classifying Vesicle Fusion and Undocking Events	Lorenz Berger, Majid Mirmehdi, Sam Reed, Jeremy Tavaré	III-329
Th-1-MU-37	Efficient Scanning for EM Based Target Localization	Raphael Sznitman, Aurelien Lucchi, Natasa Pjescic-Emedji, Graham Knott, Pascal Fua	III-337
Th-1-MU-38	Automated Tuberculosis Diagnosis Using Fluorescence Images from a Mobile Microscope	Jeannette Chang, Pablo Arbeláez, Neil Switz, Clay Reber, Asa Tapley, J. Lucian Davis, Adithya Cattamanchi, Daniel Fletcher, Jitendra Malik	III-345
Th-1-MU-39	Phase Contrast Image Restoration Via Dictionary Representation of Diffraction Patterns	Hang Su, Zhaozheng Yin, Takeo Kanade, Seungil Huh	III-615
Th-1-MU-40	Context-Constrained Multiple Instance Learning for Histopathology Image Segmentation	Yan Xu, Jianwen Zhang, Eric I-Chao Chang, Maode Lai, Zhuowen Tu	III-623
Th-1-MU-41	Structural-Flow Trajectories for Unravelling 3D Tubular Bundles	Katerina Fragkiadaki, Weiyu Zhang, Jianbo Shi, Elena Bernardis	III-631
Th-1-MU-42	Online Blind Calibration of Non-Uniform Photodetectors: Application to Endomicroscopy	Nicolas Savoire, Barbara André, Tom Vercauteren	III-639
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Th-2-AG-02	A Dynamical Appearance Model Based on Multiscale Sparse Representation: Segmentation of the Left Ventricle from 4D Echocardiography	Xiaojie Huang, Donald P. Dione, Colin B. Compas, Xenophon Papademetris, Ben A. Lin, Albert J. Sinusas, James S. Duncan	III-58
Th-2-AG-03	Automatic Detection and Segmentation of Kidneys in 3D CT Images Using Random Forests	Rémi Cuingnet, Raphael Prevost, David Lesage, Laurent D. Cohen, Benoît Mory, Roberto Ardon	III-66
Th-2-AG-04	Neighbourhood Approximation Forests	Ender Konukoglu, Ben Glocker, Darko Zikic, Antonio Criminisi	III-75
Th-2-AG-05	Recognition in Ultrasound Videos: Where am I?	Roland Kwitt, Nuno Vasconcelos, Sharif Razzaque, Stephen Aylward	III-83
Th-2-AG-06	Accurate Fully Automatic Femur Segmentation in Pelvic Radiographs using Regression Voting	C. Lindner, S. Thiagarajah, J.M. Wilkinson, arcOGEN Consortium, G.A. Wallis, T.F. Cootes	III-353
Th-2-AG-07	Automatic Location of Vertebrae on DXA Images using Random Forest Regression	M.G. Roberts, T.F. Cootes, J.E. Adams	III-361
Th-2-AG-08	Decision Forests for Tissue-specific Segmentation of High-grade Gliomas in Multi-channel MR	D. Zikic, B. Glocker, E. Konukoglu, A. Criminisi, C. Demiralp, J. Shotton, O. M. Thomas, T. Das, R. Jena, S. J. Price	III-369
Th-2-AG-09	Efficient Global Optimization Based 3D Carotid AB-LIB MRI Segmentation by Simultaneously Evolving Coupled Surfaces	Eranga Ukwatta, Jing Yuan, Martin Rajchl, Aaron Fenster	III-377
Th-2-AG-10	Sparse Patch based Prostate Segmentation in CT Images	Shu Liao, Yaozong Gao, Dinggang Shen	III-385
Th-2-AG-11	Anatomical Landmark Detection Using Nearest Neighbor Matching and Submodular Optimization	David Liu, S. Kevin Zhou	III-393

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Th-2-AG-13	Spectral Label Fusion	Christian Wachinger, Polina Golland	III-410
Th-2-AG-14	Multi-Organ Segmentation with Missing Organs in Abdominal CT Images	Miyuki Suzuki, Marius George Linguraru, Kazunori Okada	III-418
Th-2-AG-15	Non-Local STAPLE: An Intensity-Driven Multi-Atlas Rater Model	Andrew J. Asman, Bennett A. Landman	III-426
Th-2-AG-16	Shape Prior Modeling using Sparse Representation and Online Dictionary Learning	Shaoting Zhang, Yiqiang Zhan, Yan Zhou, Mustafa Uzunbas, Dimitris N. Metaxas	III-435
Th-2-MU-17	Detection of Substantia Nigra Echogenicities in 3D Transcranial Ultrasound for Early Diagnosis of Parkinson Disease	Olivier Pauly, Seyed-Ahmad Ahmadi, Annika Plate, Kai Boetzel, Nassir Navab	III-443
Th-2-MU-18	Prostate Segmentation by Sparse Representation based Classification	Yaozong Gao, Shu Liao, Dinggang Shen	III-451
Th-2-MU-19	Co-Segmentation of Functional and Anatomical Images	Ulas Bagci, Jayaram K. Udupa, Jianhua Yao, Daniel J. Mollura	III-459
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Th-2-MU-21	Parametric Dictionary Learning for Modeling EAP and ODF in Diffusion MRI	Sylvain Merlet, Emmanuel Caruyer, Rachid Deriche	III-10
Th-2-MU-22	Resolution Enhancement of Diffusion-Weighted Images by Local Fiber Profiling	Pew-Thian Yap, Dinggang Shen	III-18
Th-2-MU-23	Multi-scale Characterization of White Matter Tract Geometry	Peter Savadjiev, Yogesh Rathi, Sylvain Bouix, Ragini Verma, Carl-Fredrik Westin	III-34
Th-2-MU-24	Using Multiparametric Data with Missing Features for Learning Patterns of Pathology	Madhura Ingalhalikar, William A. Parker, Luke Bloy, Timothy P.L. Roberts, Ragini Verma	III-468
Th-2-MU-25	Non-Local Robust Detection of DTI White Matter Differences with Small Databases	Olivier Commowick, Aymeric Stamm	III-476
Th-2-MU-26	Group-wise Consistent Fiber Clustering Based on Multimodal Connectional and Functional Profiles	Bao Ge, Lei Guo, Tuo Zhang, Dajiang Zhu, Kaiming Li, Xintao Hu, Junwei Han, Tianming Liu	III-485
Th-2-MU-27	Learning a Reliable Estimate of the Number of Fiber Directions in Diffusion MRI	Thomas Schultz	III-493

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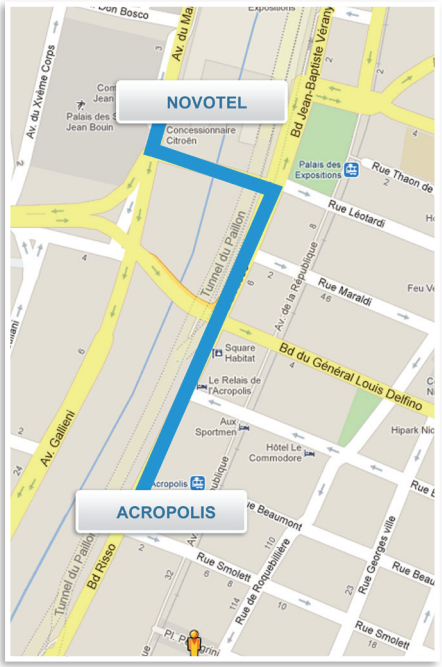
Th-2-MU-30	Multiscale Lung Texture Signature Learning Using The Riesz Transform	Adrien Depeursinge, Antonio Foncubierta-Rodriguez, Dimitri Van de Ville, Henning Müller	III-517
Th-2-MU-31	Blood Flow Simulation for the Liver after a Virtual Right Lobe Hepatectomy	Harvey Ho, Keagan Sorrell, Adam Bartlett, Peter Hunter	III-525
Th-2-MU-32	A Combinatorial Method for 3D Landmark-based Morphometry: Application to the Study of Coronal Craniosynostosis	Emeric Gioan, Kevin Sol, Gérard Subsol	III-533
Th-2-MU-33	Reliable Assessment of Perfusivity and Diffusivity from Diffusion Imaging of the Body	M. Freiman, S.D. Voss, R.V. Mulkern, J.M. Perez-Rossello, M.J. Callahan, S.K. Warfield	I-1
Th-2-MU-34	A Comprehensive Framework for the Detection of Individual Brain Perfusion Abnormalities using Arterial Spin Labeling	Camille Maumet, Pierre Maurel, Jean-Christophe Ferré, Christian Barillot	III-542
Th-2-MU-35	Automated Colorectal Cancer Diagnosis for Whole-Slice Histopathology	Habil Kalkan, Marius Nap, Robert P.W. Duin, Marco Loog	III-550
Th-2-MU-36	Patient-Adaptive Lesion Metabolism Analysis by Dynamic PET Images	Fei Gao, Huafeng Liu, Pengcheng Shi	III-558
Th-2-MU-37	A Personalized Biomechanical Model for Respiratory Motion Prediction	B. Fuerst, T. Mansi, J. Zhang, P. Khurd, J. Declerck, T. Boettger, N. Navab, J. Bayouth, A. Kamen, D. Comaniciu	III-566
Th-2-MU-38	Endoscope Distortion Correction Does Not (Easily) Improve Mucosa-Based Classification of Celiac Disease	Jutta Hämmerle-Uhl, Yvonne Höller, Andreas Uhl, Andreas Vécsei	III-574
Th-2-MU-39	Gaussian Process Inference for Estimating Pharmacokinetic Parameters of Dynamic Contrast-Enhanced MR Images	Shijun Wang, Peter Liu, Baris Turkbey, Peter Choyke, Peter Pinto, Ronald M. Summers	III-582
Th-2-MU-40	Automatic Localization and Identification of Vertebrae in Arbitrary Field-of-View CT Scans	B. Glocker, J. Feulner, A. Criminisi, D. R. Haynor, E. Konukoglu	III-590
Th-2-MU-41	Pathology Hinting as the Combination of Automatic Segmentation with a Statistical Shape Model	Pascal A. Dufour, Hannan Abdillahi, Lala Ceklic, Ute Wolf-Schnurrbusch, Jens Kowal	III-599
Th-2-MU-42	An Invariant Shape Representation using the Anisotropic Helmholtz Equation	A.A. Joshi, S. Ashrafulla, D.W. Shattuck, H. Damasio, R.M. Leahy	III-607

MICCAI WORKSHOPS, CHALLENGES AND TUTORIALS

All workshops, challenges and tutorials registration take place at the Acropolis ground floor.
Workshops, challenges and tutorials will be held in the Acropolis, on the second floor (Auditorium and Foyer Hermes, rooms Gallieni 1 to 7 and Maia), and in the Novotel, on the first floor (rooms Matisse, Garibaldi, Chagall and Cheret). Lunches and coffee breaks will be provided at both places.
The Novotel hotel is located at a 5 minute walking distance from the Acropolis Center :
Novotel Hotel address: 8/10 Parvis de l'Europe, 06300 Nice

The posters for events located at the Acropolis will be set up in Agora 2, 2nd floor of Acropolis. The posters for events located at the Novotel will be set up within and around the rooms of the workshops. Posters have to be mounted on the workshop day from 8:30 am and will have to be withdrawn before 18:00 on the same day. Non-withdrawn posters will be discarded.

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



Monday 1 October 2012

Workshops

ABDI **Computational and Clinical Applications in Abdominal Imaging**
http://www.abdominal-miccai2012.org
Hiro Yoshida, Michael W. Vannier, David Hawkes, Nicholas Ayache
Novotel, Chagall Room, 08:45 - 17:30

CBM 7 **Computational Biomechanics for Medicine VII**
http://school.mech.uwa.edu.au/CBM2012
Adam Wittek, Karol Miller, Poul M.F. Nielsen
Acropolis, Maïa Room, 09:00 - 17:30

DCICTIA **Data-and Compute-Intensive Clinical and Translational Imaging Applications**
http://proton.polytech.unice.fr/DCICTIA-MICCAI12
Johan Montagnat, Joel H. Saltz
Acropolis, Gallieni 3, 09:00 - 12:30

DBSMC **DBS methodological challenges**
http://dbsmc2012.sciencesconf.org
Eric Bardinet, Stéphane Cotin, Benoit Dawant, Caroline Essert, Pierre Jannin, Leo Joskowicz
Acropolis, Gallieni 2, 14:00 - 17:45

M2CAI **Modeling and Monitoring of Computer Assisted Interventions**
http://ubimon.doc.ic.ac.uk/m2cai/m1603.html
Stamatia Giannarou, Gregory Hager, Hiroshi Iseki, Pierre Jannin, Nassir Navab, Thomas Neumuth, Nicolas Padoy, Guang-Zhong Yang
Acropolis, Gallieni 2, 09:00 - 12:30

MBIA **Multimodal Brain Image Analysis**
http://mbia2012.web.unc.edu
Pew-Thian Yap, Tianming Liu, Dinggang Shen, Carl-Fredrik Westin, Li Shen
Acropolis, Gallieni 1, 09:15 - 17:45

MeshMed **Mesh Processing in Medical Image Analysis**
http://www2.imm.dtu.dk/projects/MeshMed
Rasmus R. Paulsen, Joshua A. Levine, Nikos P. Chrisochoides, Sylvain Prima, Ross T. Whitaker, Yongjie Zhang
Novotel, Cheret Room, 09:00 - 17:30

MLMI **Machine Learning in Medical Imaging**
http://miccai-mlmi.uchicago.edu
Fei Wang, Dinggang Shen, Pingkun Yan, Kenji Suzuki
Acropolis, Hermes Auditorium, 08:45 - 17:45

MCBR-CDS **Medical Content-Based Retrieval for Clinical Decision Support**
http://www.mcbr-cds.org
Hayit Greenspan, Henning Müller, Tanveer Syeda-Mahmood
Acropolis, Gallieni 6, 08:45 - 17:30

PaPI **Perinatal and Paediatric Imaging**
http://www.eng.ox.ac.uk/PaPI2012
Maria Murgasova, François Rousseau, Daniel Rueckert, Julia A Schnabel, Colin Studholme, Lilla Zöllei, Guido Gerig
Novotel, Garibaldi Room, 09:00 - 13:30

STENT **Computer Assisted Stenting**
http://campar.in.tum.de/STENT2012/WebHome
Stefanie Demirci, Gozde Unal, Su-Lin Lee, Petia Radeva
Novotel, Garibaldi Room, 14:00 - 17:30

STIA **Spatiotemporal Image Analysis for Longitudinal and Time-Series Image Data**
http://www.sci.utah.edu/stia2012-home.html
Guido Gerig, Stanley Durrleman, Tom Fletcher, Marc Niethammer
Acropolis, Gallieni 4, 08:40 - 17:30

Challenges and joint Workshops-Challenges

BraTS-Ch **Multimodal Brain Tumor Segmentation**
http://www.imm.dtu.dk/BRATS2012
Bjoern Menze, Andras Jakab, Stefan Bauer, Mauricio Reyes, Marcel Prastawa, Koen Van Leemput
Acropolis, Gallieni 5, 9:00 - 17:00, jointly held with PROMISE-Ch

CardioSeg-Ch **3D Cardiovascular Imaging a MICCAI segmentation Challenge**
http://grand-challenge2012.bigr.nl
Hortense Kirisli, Theo van Walsum, Wiro Niessen, Caroline Petitjean
Acropolis, Gallieni 7, 09:00 - 17:30

DTI-Tracto-Ch **DTI Tractography**
http://dti-challenge.org
Sonia Pujol, Ron Kikinis, Martin Styner, Alexandra Golby, Arya Nabavi, Guido Gerig, William Wells, Carl-Fredrik Westin, Sylvain Gouttard
Novotel, Matisse Room, 08:30 - 18:00

PROMISE-Ch **Prostate Segmentation from T2-weighted MRI**
http://promise12.grand-challenge.org
Dean Barrat, Jason Dowling, Henkjan Huisman, Anant Madabhushi, Bram van Ginneken, Sjoerd Kerkstra, Geert Litjens, Rob Toth
Acropolis, Gallieni 5, 08:30 - 18:00, jointly held with BraTS-Ch

Tutorials

IGT-tut **From Minimally Invasive Image-Guided Interventions To Non-Invasive Ultrasound based Interventions**
http://medtech.sintef.no
Ziv Yaniv, Pascal Fallavollita, Frank Lindseth, Thomas Langø
Acropolis, Hermes Foyer, 09:00 - 17:30

Friday 5 October 2012

Workshops

AE-CAI **Augmented Environments & Computer-Assisted Interventions**
http://ae-cai2012.imaging.robarts.ca
Cristian A. Linte, David R. Holmes III, Marie-Odile Berger, John Moore, Elvis Chen
Novotel, Chagall Room, 08:30 - 17:30

CDMRI **Computational Diffusion MRI**
http://cmic.cs.ucl.ac.uk/cdmri12
Eleftheria Panagiotaki, Lauren O'Donnell, Thomas Schultz, Gary Hui Zhang
Novotel, Cheret Room, 08:45 - 18:00

CLIP **Clinical Image-based Procedures: From Planning to Intervention**
http://miccai-clip.org
Klaus Drechsler, Marius Erdt, Marius George Linguraru, Cristina Oyarzun Laura, Karun Sharma, Raj Shekhar, Stefan Wesarg
Novotel, Matisse Room, 09:00 - 17:30

HIMA **Histopathology Image Analysis: Image Computing in Digital Pathology**
http://go.warwick.ac.uk/hima2012
Anant Madabhushi, Metin Gurcan, Nasir Rajpoot, Michael Feldman
Acropolis, Hermes Foyer, 09:00 - 18:00

IGRT **Image-Guidance and Multimodal Dose Planning in Radiation Therapy**
http://medical.rob.uni-luebeck.de/miccai2012rt/
Wolfgang Birkfellner, Jamie McClelland, Simon Rit, Alexander Schlaefer
Acropolis, Maïa Room, 09:00 - 17:30

MCV **Medical Computer Vision**
http://www.cir.meduniwien.ac.at/mcv2012
Bjoern Menze, Georg Langs, Albert Montillo, Zhuowen Tu, Antonio Criminisi
Acropolis, Hermes Auditorium, 09:00 - 17:30

SACAI **Systems and Architectures for Computer Assisted Interventions**
https://visr.lcsr.jhu.edu/wiki/index.php/Sacai2012
Rajesh Kumar, Andinet Enquobahrie, Oliver Burgert, Stefan Bohn, Kiyo Chinzei, Nobuhiko Hata, Peter Kazanzides
Acropolis, Gallieni 6, 09:00 - 17:00

STMI **Sparsity Techniques in Medical Imaging**
http://stmi12.rutgers.edu
Dimitris Metaxas, Leon Axel, Junzhou Huang, Shaoting Zhang
Acropolis, Gallieni 5, 09:00 - 17:30

Challenges and joint Workshops-Challenges

MultiAtlas **Multi-Atlas Labeling**
https://masi.vuse.vanderbilt.edu/workshop2012/index.php/Main_Page
Bennett Landman, Simon Warfield
Acropolis, Gallieni 7, 09:00 - 12:30

NeoBrainS **Neonatal Brain Segmentation**
http://neobrains12.isi.uu.nl/
Ivana Išgum, Manon J.N.L. Benders, Max A. Viergever
Acropolis, Gallieni 7, 14:00 - 17:30

NIBAD **Novel Neuroimaging Biomarkers for Alzheimer's Disease**
http://picsl.upenn.edu/nibad12
Lei Wang, Paul Yushkevich, Sebastien Ourselin
Acropolis, Gallieni 1, 09:00 - 18:00

STACOM **Statistical Atlases and Computational Models of the Heart**
http://www.physense.org/stacom2012
Oscar Camara, Kawal Rhode, Tommaso Mansi, Mihaela Pop, Maxime Sermesant, Alistair Young
Acropolis, Gallieni 4, 08:50 - 18:00

Tutorials

BCN-tut **Brain Connectivity Networks: Biology, Imaging and Beyond**
http://www.rad.upenn.edu/sbia/MICCAI_Connectivity_Tutorial_2012/index.html
Ragini Verma, Rachid Deriche
Novotel, Garibaldi Room, 08:45-17:30

DecisionForests **Decision forests**
http://research.microsoft.com/en-us/groups/vision/decisionforests.aspx
A. Criminisi, J. Shotton, E. Konukoglu
Acropolis, Gallieni 2, 09:00-12:30

Molecular **Modeling and Analysis of Molecular Imaging**
http://phd.gccis.rit.edu/feigao/MolecularImagingTutorial/
Fei Gao, Kuangyu Shi
Acropolis, Gallieni 2, 14:00-17:30

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MICCAI 2012 Young Scientist Awards

Each year, the MICCAI conference presents a number of awards to graduate students and early career scientists for outstanding papers published in the MICCAI proceedings. These papers will initially be short-listed by the programme committee and then considered by the awards committee. The winners will be selected based on reviews and oral/poster presentations at the conference.

MICCAI 2012 Student Travel Award

The MICCAI Society offers 18 awards for student travel, matched with another 18 awards from the MedYMA ERC Grant for a total of 36 awards to qualified student attendees.

MICCAI Enduring Impact Award

Sponsored by Philips, the award is for publications with measurable contributions that have proven, persistent impact on the field of medical image analysis and interventions. Nominations are made by MICCAI Board and MICCAI Society members.

MICCAI 2012 Best Paper Award in Medical Robotics & CAI Systems

Sponsored by the MICCAI society, this award recognizes outstanding work in the area of medical robotics and computer assisted interventional devices and systems. Eligible work must focus primarily on interventional devices and/or their integration with guidance technologies. The best paper award shall be judged based on relevance to the topic, originality, technical merit, clarity and potential clinical impact.

MICCAI 2012 Young Investigator Publication Impact Award

Sponsored by Kitware. To be eligible, the applicant must be the first author of a paper published at MICCAI in the last five years, and be an early career scientist at the time of publication. The winner will have made a substantial impact on the field based on this publication.

MICCAI 2012 Media Prize

Sponsored by Elsevier, this award will be presented to the best papers published in the special issue of the Medical Image Analysis Journal dedicated to the previous MICCAI Conference.

CONVENTION FLOOR MAP

Nice - Acropolis
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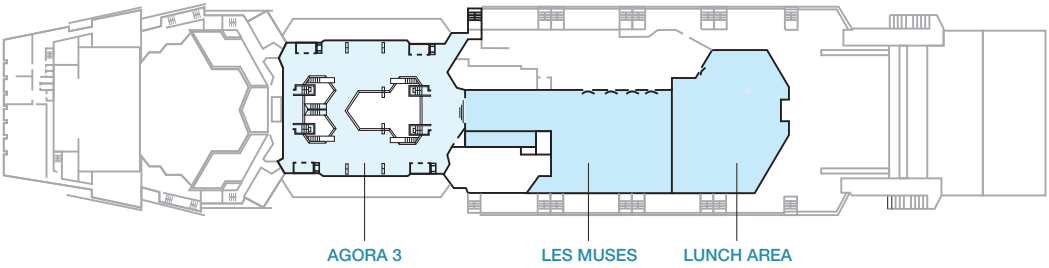
LEVEL 3



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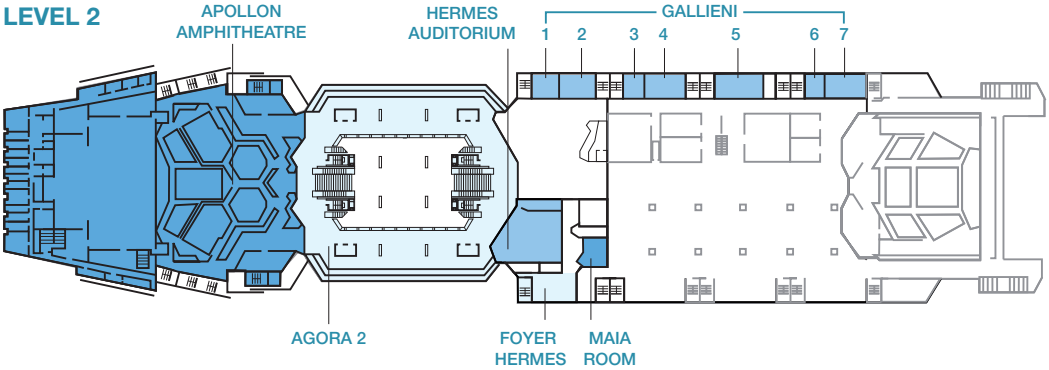

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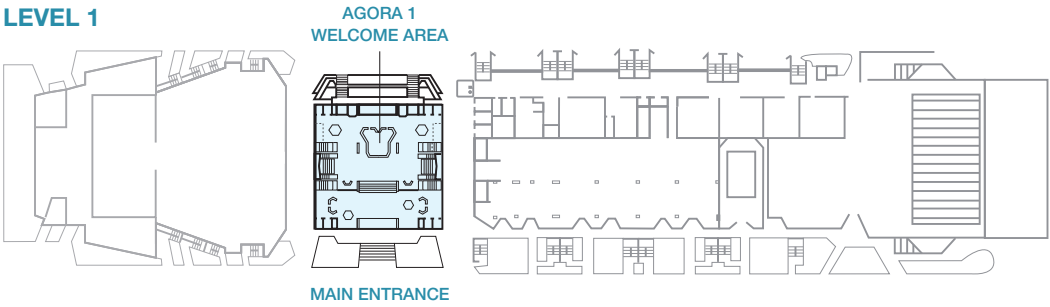
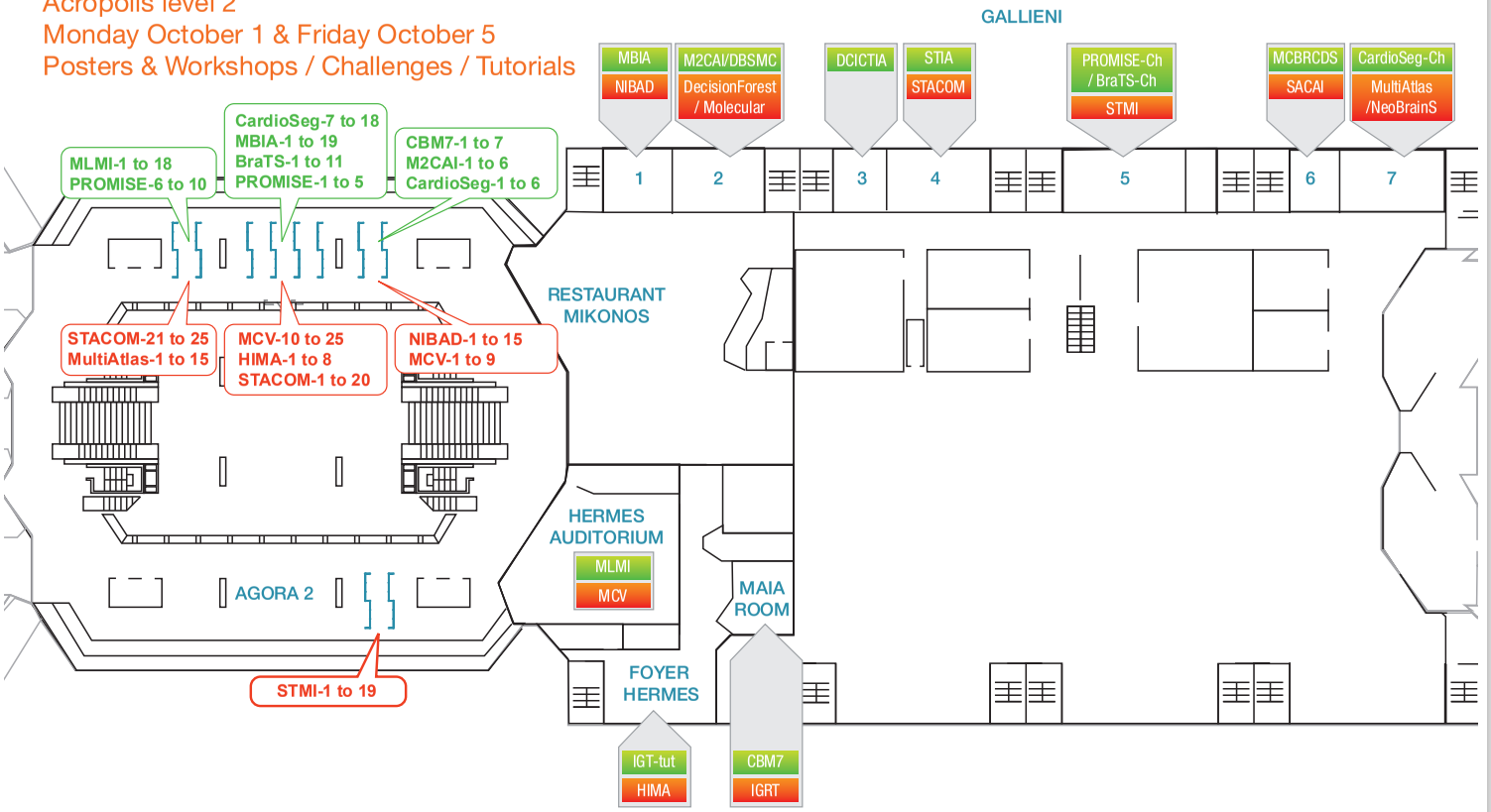
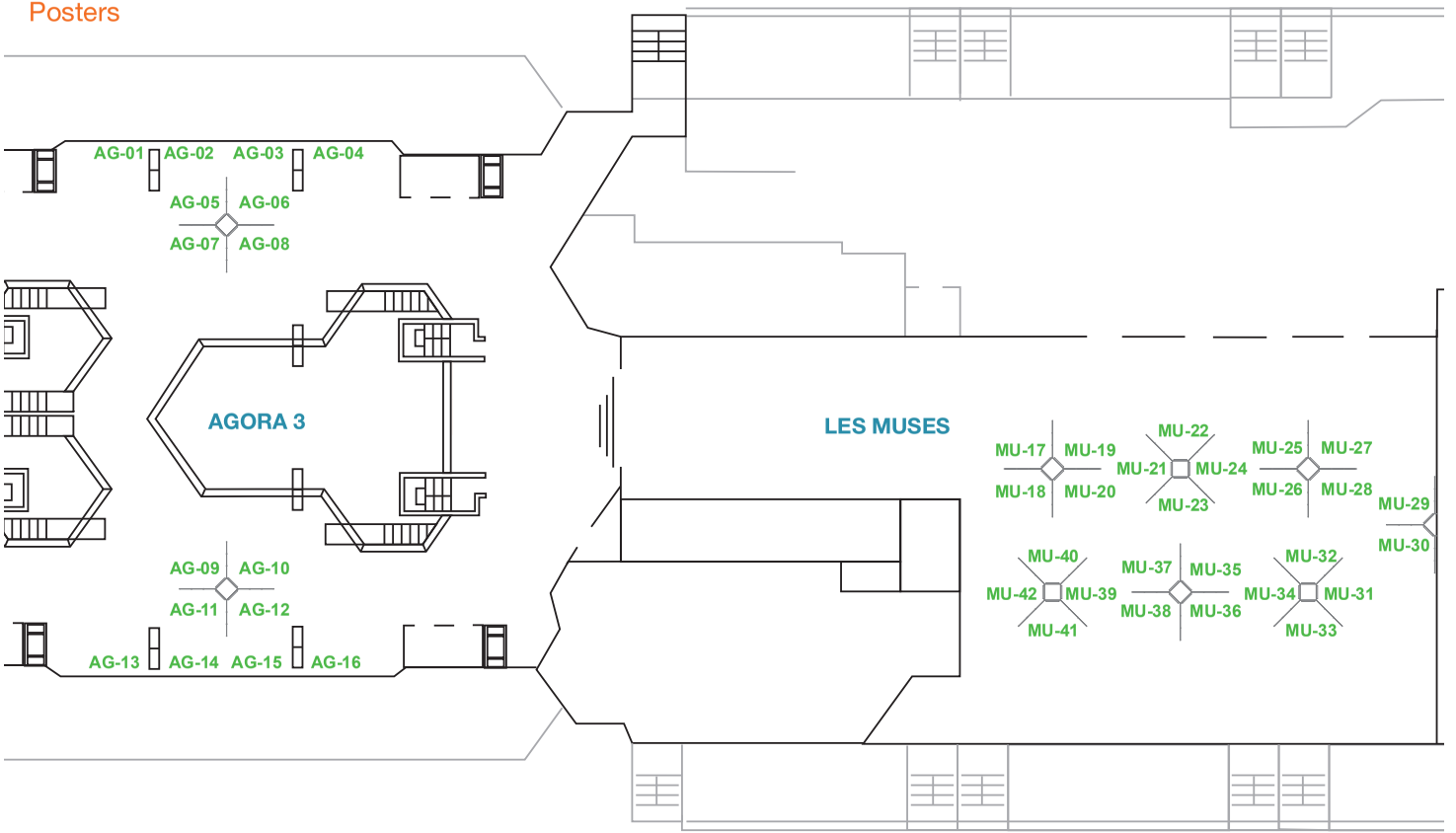


Acropolis level 2
Monday October 1 & Friday October 5
Posters & Workshops / Challenges / Tutorials



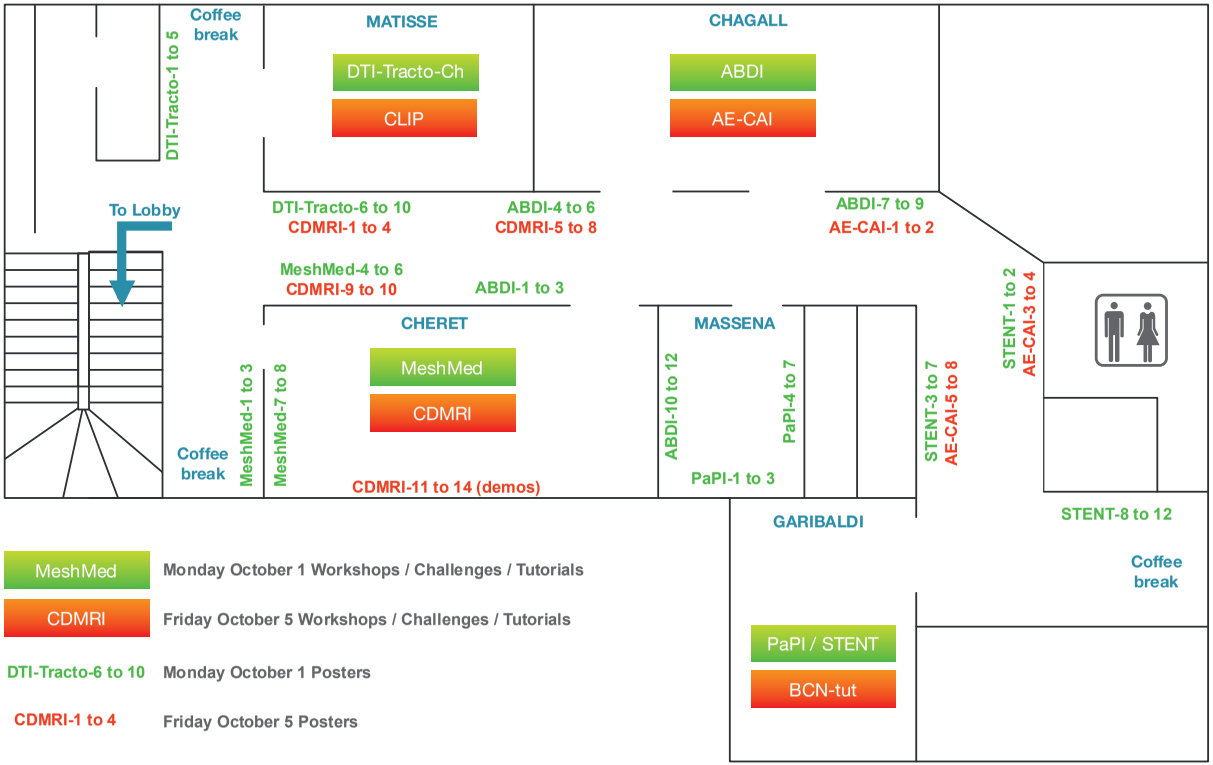
MLMI-6 to 10	Monday October 1 Posters	IGT-tut	Monday October 1 Workshops / Challenges / Tutorials
STMI-1 to 4	Friday October 5 Posters	HIMA	Friday October 5 Workshops / Challenges / Tutorials

Acropolis level 3
Tuesday October 2 to Thursday October 4
Posters



AG-01 to MU-42 Posters from Tuesday October 2 to Thursday October 5

Novotel level 1
Workshops / Challenges / Tutorials



MeshMed	Monday October 1 Workshops / Challenges / Tutorials
CDMRI	Friday October 5 Workshops / Challenges / Tutorials
DTI-Tracto-6 to 10	Monday October 1 Posters
CDMRI-1 to 4	Friday October 5 Posters

NOTES

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