



**Witajcie w Krakowie!
Welcome to Krakow,
Bienvenu a Cracovie,
Willkommen in Krakau,
Здравствуйтe в Кракове,
Bienvenidos en Cracovia,
Bienvenuto a Cracovia,
Välkomna till Krakow
Vitejte v Krakovie**

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Silvermedia is an innovative IT company founded in 2002, based in Krakow, Poland. In science and healthcare, we offer extensive services in the following areas:

- › IT consulting,
- › design, integration, implementation, deployment and support for customized software solutions,
- › development, implementation and integration of new medical devices.

Our unique expertise in healthcare IT is in optimization and data analysis, including biomedical signal analysis. These have been applied in the form of diagnosis support tools for audiology, cardiology, neurology and allergology.



SILVERMEDIC

Silvermedia's range of high quality and powerful solutions for science and healthcare is a platform called Silvermedic. The idea behind Silvermedic is to create a set of IT tools that would allow us to develop dedicated and user friendly solutions for specific needs in a faster, more cost-efficient manner. Using our years of experience in science and healthcare, we have prepared modular sets of web applications, mobile devices applications, and administration and management tools. All of which can be combined, configured and extended to meet the expectations of our clients.

Some of the Silvermedic Platform features include:

- › extensible, patient-centric data repository,
- › diagnostic support tools based on algorithms and tools prepared by Silvermedia or externally,
- › extensive framework for integration using both industry standards such as HL7 or DICOM,
- › dedicated workflows,
- › powerful, customizable tools for reporting and analysis.

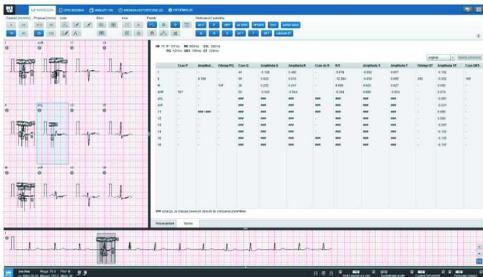
Silvermedic can assist you in the following scenarios:

- › screening programs' management, planning, executing and monitoring,
- › research management for scientific projects,
- › telemedicine and home care applications.

In cardiology, we offer a specific set of dedicated modules that allows us to provide services including remote ECG interpretation, and monitoring based on ECG event monitors as well as on cardiac rehabilitation. Silvermedic Cardio key components are:

- › **Silvermedic Cardio WebViewer:** web-enabled ECG signal viewer compatible with SCP standard,
- › **Silvermedic Cardio Algorithms:** ECG analysis algorithms,
- › **Silvermedic Cardio Desktop:** a standalone, Windows® desktop application for acquisition of ECG recordings directly from the ECG devices.

Silvermedic Cardio WebViewer: Designation of Representatives Table



To ensure the best possible quality of our services, Silvermedia has obtained ISO Certifications: ISO 9001 and ISO 13485.



The 39-th conference on Computing in Cardiology is hosted by:



AGH

AGH UNIVERSITY OF SCIENCE AND TECHNOLOGY

under the honorary patronage of the Mayor of the City of Krakow,
Jacek Majchrowski



The CinC 2012 scientific program is endorsed by:



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The Engineering in Medicine and Biology Society of the IEEE advances the application of engineering sciences and technology to medicine and biology, promotes the profession, and provides global leadership for the benefit of its members and humanity by disseminating knowledge, setting standards, fostering professional development, and recognizing excellence.

The field of interest of the IEEE Engineering in Medicine and Biology Society is the application of the concepts and methods of the physical and engineering sciences in biology and medicine. This covers a very broad spectrum ranging from formalized mathematical theory through experimental science and technological development to practical clinical applications. It includes support of scientific, technological and educational activities.

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PUBLICATIONS

IEEE PULSE

Transactions on Biomedical Engineering/Transactions on Biomedical Engineering Letters
Transactions on Information Technology in Biomedicine
Transactions on Neural Systems and Rehabilitation Engineering
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Transactions on Computational Biology and Bioinformatics
Transactions on Biomedical Circuits and Systems
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CONFERENCES

Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)
IEEE EMBS Special Topic Conference on Neural Engineering (NER)
International Symposium on Biomedical Imaging (ISBI)
International Conference on Biomedical Robotics and Biomechanics (BIROB)
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Universidad
Zaragoza

COMPUTING
IN
CARDIOLOGY



Computing in Cardiology 2013

September 22-25, 2013, University of Zaragoza, Spain.



The 2013 Computing in Cardiology Conference will be held in the beautiful and historical city of Zaragoza, Spain, from September 22-25. The meeting is affiliated with University of Zaragoza which will host the event. Zaragoza is a modern and welcoming city, with more than 2000 years of history. Its Iberian, Roman, Muslim and Christian history has gradually shaped the city to make it not only beautiful but also full of surprises.

It has many cultural and historical landmarks, including the *Basilica del Pilar*, the symbol of the city par excellence. Parks, river banks, groves, river meanders... Zaragoza boasts several privileged natural spaces where water, and in particular the River Ebro, take the central stage, affording the city a special type of energy and light.

The social programme will include visits to some of the most prominent monuments, such as The *Aljafería* Palace, *La Seo* Cathedral, *La Lonja*, the Roman Walls and the *Puerta del Carmen*, outstanding examples of Roman, Muslim, Jewish and Christian heritage.

Zaragoza is easy to reach by plane and high-speed train, thanks to its privileged location between Madrid and Barcelona.

Participants can fly:

- Directly to Zaragoza from Brussels, Milan, London or Paris.
- To Madrid or Barcelona and transfer to Zaragoza by high-speed train (one hour and 30 minutes).

After the CinC meeting, participants will have the opportunity to visit some of the attractive destinations near Zaragoza.

For further details, please refer to www.cinc2013.org.

Computing in Cardiology 2013, Zaragoza, Spain

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Krakow, Poland

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Letter from the President

Dear Participant,

Once again, Computing in Cardiology is being held in Europe and I am very pleased to be able to welcome you to the 39th Computing in Cardiology Conference, being held in the beautiful city of Krakow. As you will read and see elsewhere, the city itself is steeped in history and I am sure you will enjoy walking around the city and visiting its environs.

Notwithstanding, the whole purpose of Computing in Cardiology is to allow you to share your scientific experiences with colleagues and enjoy the exchange of information (networking!) in the best scientific tradition. At the same time, of course, I am sure you will enjoy the social aspects of Computing in Cardiology, which are always a highlight of the meeting. This year will be no exception and an additional special social event is planned on the Sunday evening after the symposium.

The host of this year's meeting, Professor Piotr Augustyniak has, for some time, been extremely keen to hold the meeting in the AGH University of Science and Technology in Krakow. He has expended a great deal of effort in organising the meeting and is keen to ensure that every delegate extracts the maximum benefit from the conference. On this occasion, there are even two preconference workshops in areas that might not normally be associated with Computing in Cardiology, e.g. cardiac surgery and cardiotoxicity prediction. I hope they will prove popular.

The Board of Directors of Computing in Cardiology would like to take this opportunity to thank Professor Augustyniak most sincerely for the tremendous amount of work which he has put in to organising the meeting. He has been supported by a team of young colleagues from AGH University of Science and Technology, who must also be thanked for their enthusiastic support of arrangements. The names of the Local Organising Committee can be found elsewhere in this booklet.

The Board of Directors of Computing in Cardiology continue to work hard behind the scenes throughout the year, and I must thank them all very sincerely for doing so. For example, they continue to encourage individuals to host future meetings. Each September, there is what is known as a Future Sites Meeting where those interested in hosting Computing in Cardiology outline plans for holding the meeting in their own city. While we know that the

2013 meeting will be held in Zaragoza in Spain and the 2014 meeting will be held in the Boston area, Massachusetts, there are in addition 5 other Universities interested in hosting Computing in Cardiology. This is certainly pleasing to the Board and we hope it will be of encouragement to you to continue to support Computing in Cardiology in the knowledge that it remains an extremely popular conference which scientific colleagues vie with each other, in a friendly way, to host.

I hope that each one of you will truly enjoy participating in this year's meeting and will wish to return on a future occasion.

Best wishes

Peter Macfarlane
President, Computing in Cardiology

Welcome to Krakow

Dear Colleague,

It is with great pleasure and excitement that we welcome you to the 39th Annual Scientific Conference of Computing in Cardiology, being held in Krakow, Poland from Sunday, 9th to Wednesday, 12th September 2012..

Krakow, the historical capital of Poland, has witnessed several events of primary importance to Polish people and to the Mid-Eastern part of Europe. Here was the centre of power and trade of medieval Poland; here was the ambience beloved by artists and scientists in the Renaissance and the spirit of freedom during the periods of dependence in the 19th century and of Soviet domination in the 20th. Therefore we are particularly pleased that such a prestigious event as the Computing in Cardiology Conference, usually alternately hosted by Western European Countries and the United States, and very recently by China, takes place in our city for the first time in this part of Europe. As usual, the meeting will be an occasion for presentation and discussion of your most recent achievements. We are also hoping to share with you our love of this beautiful country and to create the opportunity for local young scientists to make friends and hopefully future professional relations in the society of computerized ECG.

As the local organizer, the Multidisciplinary School of Engineering in Biomedicine, AGH University of Science and Technology, has the pleasure and honor to be the host of Computing in Cardiology 2012. We warmly welcome delegates from around the world and hope that you will enjoy your visit to Krakow. Nearly 30 volunteers and the Local Organizing Committee will be glad to assist you in meeting your expectations, because according to an old Polish proverb, "*having a guest means receiving God under your roof*".

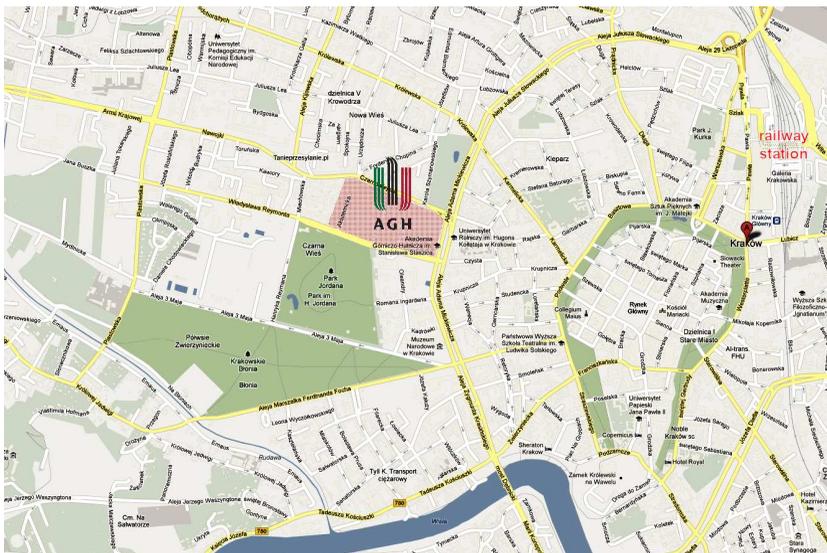
We look forward to seeing you in Krakow for a stimulating and enjoyable conference and genuinely hope that you will join us to make this endeavor a success. Thank you!

Sincerely,

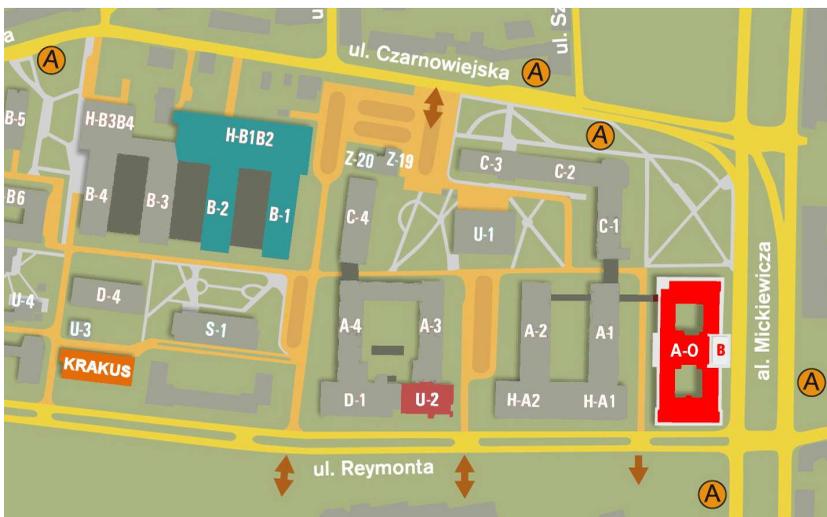


Piotr Augustyniak,
Chair of the Local Organizing Committee

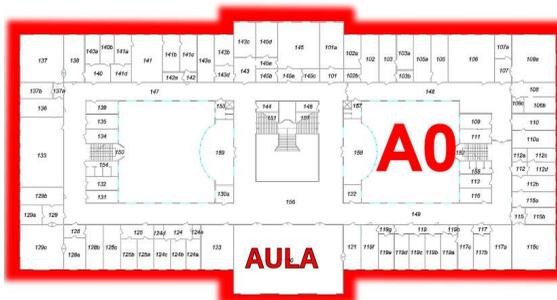
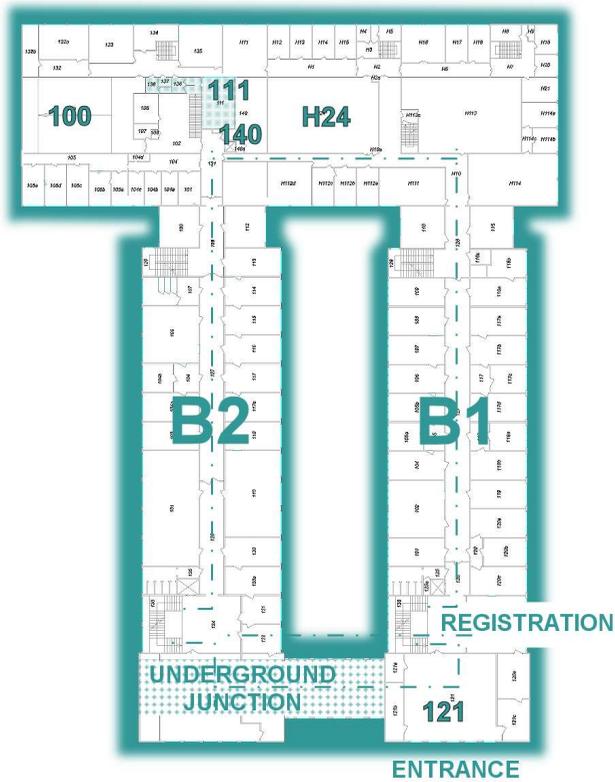
Map of the City Center



Map of the AGH-UST campus



Detailed maps of the conference rooms



General information

Computing in Cardiology is one of the premier events focusing on computer applications in clinical cardiology and cardiovascular research. The annual meetings have been held for nearly four decades and attract scientists and professionals from the fields of medicine, physics, engineering and computer science. This year's meeting is hosted by the Multidisciplinary School of Engineering in Biomedicine, AGH University of Science and Technology.

Krakow was first mentioned in the year 965 as a rich burg city, situated at the crossing of trade routes and surrounded by woods. In 1138, Krakow Castle became more important as the official home of the highest Duke. Since 1320, the Cathedral has been witness to coronation ceremonies occurring over the following five centuries. In 1364, Kazimierz the Great founded the Krakow Academy, which was the origin of the later Jagiellonian University. In the Jagiellonian epoch which lasted for the next 200 years, Krakow with Europe's biggest market square became the capital of a monarchy spreading over territories from the Baltic to the Black Sea. The royal court played an important role in supporting artistic and cultural life. Outstanding humanists, scientists and artists came to Krakow from Italy, Germany and other countries.

Today, Krakow is Poland's second academic center with over 200,000 students, and a very dynamic scientific milieu. It houses the National Science Centre, which is a government executive agency set up to fund basic research. Krakow is home to many artists of worldwide reputation and hosts a vast number of artistic events. Having about 300 restaurants, pubs and cafes within the down town area, Krakow is known as the main destination of gourmet tourism in Poland. The social programme will include visits to some of these sites.



AGH University of Science and Technology established on 20th October 1919, until 1949 known as the Academy of Mining, founded after long-lasting endeavours which had started in 1782, the year when the Ore Commission was

AGH

established, has been continuing the traditions of the Academy of Mining in Kielce (1816-1827), inaugurated by Stanisław Staszic. The University, being a technical school, serves science and industry through educating students, by development of its academic staff, as well as through research and development. The University cherishes its traditions and educates its students to be honest and responsible people both at work, and as members of the society, according to its motto: "Labore creata, labori et scientiae servio" (Created in labour, I serve labour and science.)

Currently the AGH-UST is listed as second Polish University on the list of the 500 World best universities. The supercomputer Zeus - Cluster Platform is listed as the first Polish high-performance computer on the list of the Top 500 Supercomputer Sites. The AGH-UST serves science, the economy and society through educating students and the development of scientific and research staff, as well as conducting scientific research. The number of branches of science is 50, in 200 separate specializations, The total number of students (as of 30th Nov. 2011) is 37996, and the total number of staff is 4 052.



The Multidisciplinary School of Engineering in Biomedicine (MSIB) is located at the AGH University of Science and Technology and has been in operation since the academic year 2005-2006.

Although MSIB has been formed on the basis of the staff formally belonging to five faculties, it is treated as a separate part of the AGH University and has its own students. Formally, MSIB's structure is similar to that of other faculties. It is governed by a Board of 18 persons. This Board, approved by the University Senate, is made up of professors with not less than a DSc degree who are teaching at MSIB, as well as of an adequate representation of students. At present, the professors represent five faculties:

- Faculty of Electrical Engineering, Automatics, Computer Science and Electronics,
- Faculty of Materials Science and Ceramics,
- Faculty of Mechanical Engineering and Robotics,
- Faculty of Metals Engineering and Industrial Computer Science, and
- Faculty of Physics and Applied Computer Science.

One of the Board's tasks is to recommend, to the Rector, appointments for the Head and the Deputy Head of the School. The appointed Head is also President of the Board. The main responsibility of the Board is to supervise the education process, assure its highest quality, verify and, if necessary, correct academic curricula, prepare staff assignments and implement other objectives of the School. The Head also represents the MSIB in the University Board on a par with deans of other faculties. The current education program in biomedical engineering consists of:

- A single 7-semester track leading to the First (Undergraduate) Degree (Bachelor's/Engineer's, 150 candidates each year);
- Five domain-oriented 3 or 4-semester tracks leading to the Second (Master) Degree (5 x 30 candidates each year);
- A single 8-semester track leading to the Third Degree (Doctorate, 10 candidates each year).

From the student's viewpoint, there is no organizational difference between the faculty and the Multidisciplinary School. Both have a Dean's Office, a staff of qualified teachers, a social support system and a student board. As far as education is concerned, the rights and responsibilities of the Head of the School are identical to those of a Dean, the only difference being that research is carried out in laboratories in various faculties run by individual professors rather than in the organizational framework of MSIB.

Hotels and Conference Venue

A variety of accommodation options, ranging from a hostel to 5* hotels and fitting to any budget, have been recommended to ensure your pleasant stay in Krakow. Please be informed, that Krakow hotels are very busy in September. The Local Organizing Committee recommend that you book your room as early as possible to avoid disappointment.

The conference is being held in lecture rooms of the AGH-University of Science and Technology as outlined below:

Sunday Symposium	building U2, Auditorium
opening and closing ceremonies	building A0, Aula
regular oral sessions	building B1, rooms 121 and H24
	building B2, rooms 100 and 140
poster sessions	Krakus restaurant

Please refer to the map of the AGH-UST campus and to the detailed conference program to be sure you are on time at the session of your interest. The buildings and lecture rooms will be clearly marked with the Computing in Cardiology signs.

Transportation

During the conference, private bus transportation will be provided to and from the Cardiac Surgery Workshop and social events on Sunday and Monday. For journeys starting at AGH-University of Science and Technology, the meeting and embarkation point is in front of the **U2 building**. It is important that delegates are there at the correct times. This is outlined in the Social Program section of this booklet.

By courtesy of the Krakow City Council, public transportation (trams and busses) in Krakow are free for Computing in Cardiology attendees and accompanying persons from 9th to 12th September (both days included). Delegates simply need to wear their conference badge and be prepared to show it along with their photo ID to the ticket-inspector.

Otherwise, from the variety of tickets proposed, we wish to recommend a 15 min single journey ticket (cost 2 zł) or 30 min single journey ticket (cost 3.20 zł). Both allow changes in transportation means within the specified time following the first validation. Tickets can also be purchased at newspaper stands and in vending machines on board. Alternatively, you may buy them directly from the driver with a surcharge of 0.50 zł.

Hiring a taxi is easy everywhere and any driver will bring you to the AGH-UST campus. Before taking the taxi on the street, please be sure the taxi displays a price list and uses the meter. Most drivers accept credit cards for payment, but not foreign currency cash. It is a good idea to have your hotel name and address printed with you. Since there are over 20 universities in Krakow, to avoid confusion say "AGH" or show the AGH-UST logo on your badge. The address of **U2 building** is **7, Reymonta Str.**

Registration

For the duration of the conference, the registration and information desk will be located in **U2, A0** and **B1**, following the participants' flow.

The registration desk will be labeled with the CinC sign and will be open at the following times:

Sunday, 9th September	12:00 – 17:00	building U2
Monday, 10th September	7:30 – 9:30	building A0
	10:00 – 13:00	building B1
Tuesday, 11th September	7:30 – 18:00	building B1
Wednesday, 12th September	7:30 – 15:00	building B1

Internet access

Within the conference rooms in **B1** and **B2 buildings**, a purpose-built wireless network will be available free of charge. The network name is 'cinc2012' and the password is 'Poland'. Alternatively, in all AGH-UST buildings the network 'AGH-guest' is available free of charge without a password.

The only device you need is a WiFi-enabled laptop or smartphone. Should you need any assistance in getting connected, please ask the nearest volunteer for help.

Program on-line

For the internet-connected participants a most recent conference program and announcements will be available on-line through a web page: <http://home.agh.edu.pl/cinc/online> optimized for mobile devices like smart phones and tablets. This page will also be continuously displayed on the screen above the registration desk in **B1 building**.

Meals

Since Krakow is known also as a gourmet destination, the delegates will not have to worry about meals.

- The **Sunday** symposium concludes with a visit to the Wieliczka Salt Mine where **dinner** will be served in a cave 180 meters under the ground level.
- **Monday** sit down **lunch** will be served after the S3* sessions in the **Krakus Restaurant** (first floor) from 13:00 to 14:00
- **Monday** social event concludes with a **dinner** in a rustic environment in a countryside restaurant close to Krakow,

- **Tuesday** sit down **lunch** will be served after the S6* sessions in the **Krakus Restaurant** (first floor) from 13:00 to 14:15.
- **Tuesday** poster session will be accompanied by a **light reception** in the Exhibition Room, before inviting you to a 1-hour show of traditional dances. For this evening, the participants are encouraged to explore some of the famous Krakow caves, pubs or restaurants on their own. Our recommendations with discount tickets are distributed in delegates' kits.
- **Wednesday** buffet **lunch** in the **Krakus Restaurant** (first floor) will start after the poster session at approximately 12:00.

In order to keep up the meeting timetable, the attendees are kindly asked to proceed quickly to the Krakus Restaurant immediately after the session finishes.

Regular coffee breaks with tea, coffee, soft drinks, cakes and fruits are planned as follows:

Sunday, Sep. 9th	14:30 - 15:00	lobby of U2 Auditorium
Monday, Sep. 10th	11:15 - 11:30	underground B1-B2 junction
Tuesday, Sep. 11th	9:45 - 10:15	underground B1-B2 junction
	16:00	Krakus Exhibition Room
Wednesday, Sep. 12th	10:00	Krakus Exhibition Room

Accompanying Persons

The accompanying person registration allows the guest to attend:

- the visit and reception on Sunday evening in Wieliczka Salt Mine (bus departure at 17:30 from the parking area in front of the **U2 Auditorium**),
- the Monday social event starting at 13:00 with lunch, participation as an activist or passivist in the activities and in the rustic dinner, which will be held at the Folwark Zalesie.
- the Tuesday accompanying Persons' Programme (at their own cost),

Tuesday afternoon Guests are also welcome to attend at the conference poster sessions and the show of traditional dances.

The Tuesday Accompanying Persons Programme starts at 9:00 at the conference registration desk in **B1 building** and lasts for 3 to 5 hours.

Four optional guided tours are proposed:

- **The pearl of Wawel Hill** - The tour will include a visit to the Royal Castle and the Wawel Cathedral, which is the national temple, having witnessed most of the royal coronations, funerals, and celebrations. There are many little chapels and shrines throughout the cathedral, as well as towers and crypts. The highlight of Wawel Castle is a tour of a temporary exhibition: Leonardo da Vinci Lady with an Ermine. At the end of the tour, we can go down to the Royal Crypts and Sigismund's tower. (minimum 10 participants, 160 zł).
- **The traces of Jews in Kraków** - This is a half day sightseeing tour of Kazimierz with a visit to the Temple synagogue in Szeroka street and the Jewish Ghetto area in Podgórze. During the tour, you will see and visit many of the locations that were used for the filming of Schindler's List including Otto Schindler's factory. (minimum 10 participants, 160 zł).
- **The traces of Krakow Saints** - The tour will include a visit to the Royal Wawel Cathedral where the former Cardinal Karol Wojtyła was the Archbishop of Krakow, before becoming Pope John Paul II. You will also visit the St. Mary's Church with its famous 15th century altar made by Wit Stwosz and the Skalka Church where the first polish martyr, bishop St. Stanisław Szczepanowski was murdered. Next you will go to the St. Anna's Church where the famous polish professor was buried. At the end of the tour, you will be transferred to the Sanctuary of Divine Mercy in the Krakow-Łagiewniki quarter. (minimum 10 participants, 120 zł).
- **Jagiellonian University quarter** - The tour is a visit to one of the oldest Universities in Central Europe established in 1364 by King Kazimierz the Great. Among its students were Nicolaus Copernicus, King John III Sobieski and John Paul II. The tour includes: visit of Collegium Maius – the oldest of the University's buildings, the Church of St. Anne whose history has been inextricably linked to that of the University, Collegium Novum and Nowodworski College. The tour ends with a visit to the Mariacki Church which is a witness to the culture of the city's inhabitants. (minimum 10 participants, 80 zł).

In all cases, the reservation should be made 10 days in advance, but the tourist agency will accept last minute bookings depending upon availability of places. All fees include the services of an English

speaking guide, entrance to all sites, as well as transportation.
In case of doubts, contact the Tourist Agency **VipTour**:
by phone: +48 602805548, or email: agnes@viptour.com,

Useful numbers:

Emergency calls free of charge from mobile boxes:	112
Direct emergency numbers in Krakow:	
Police:	+4812 997
Ambulance:	+4812 999
Krakow public transportation information:	+4812 9150
<i>Computing in Cardiology</i> Registration Desk:	+48 603606285

For Authors and Speakers

Oral Presentations

The time allocated for each oral presentation is 10 minutes, followed by 5 minutes for discussion. Speakers are expected to adhere strictly to this schedule, which will be enforced by session chairs in order to finish sessions on time and to permit participants to move successfully from one parallel session to another.

All conference rooms will be equipped with a computer projection system (LCD projector and PC with Windows 7, Microsoft Office 2007, PowerPoint 2010 Viewer, Windows Media Player and Adobe Acrobat reader). Speakers are required to allow adequate time prior to their sessions to load and check their presentations on the designated computer. A member of the Local Organizing Committee will be available in each parallel session to help. In addition, speakers are required to meet with their session chairpersons in the scheduled conference room at least 10 minutes before the beginning of the session. It is good idea to ensure that the chairperson knows how to correctly pronounce your name.

Speakers ready room

For Authors' convenience, a **speaker's ready room** is provided (room 111 in **B2 building**, 2-nd floor) and equipped with computers to check and upload presentations. Please ensure that your presentation correctly loaded before the start of your session.

Poster Presentations

Poster sessions will take place in the **Krakus building** on Tuesday, 11th September from 16:00, and on Wednesday, 12th September, from 10:00. The Exhibition Room is located on the ground floor of the building, through the entrance lobby on the left hand side. Authors are required to be present at their posters during their assigned session in order to discuss their work with other conference attendees.

Authors are welcome to visit the Exhibition Room (**Krakus building**, ground floor) at least 30 minutes prior to the poster session and hang their posters at the location designated with the correct number. Posters may be hung:

- between 15:30 and 16:00 for the Tuesday session, and
- between 08:00 and 10:00 for the Wednesday session.

Subject areas for the poster sessions will be clearly marked and poster boards will be numbered with a card corresponding to the page number in this book. Mounting materials will be provided at the entrance. Authors are expected to remove their posters immediately after the end of the sessions to allow the timely cleaning of the Exhibition Room.

Rosanna Degani Young Investigator Award

Computing in Cardiology runs an annual competition to encourage young investigators and to provide a living memorial to Rosanna Degani. The competition for the 2012 Rosanna Degani Young Investigator Award was open to persons under 36 years of age and in "training status" at the submission deadline of May 1st, 2012. Finalists in the competition will present their work in session M1, at 8:15 on Monday, 10th September in the Aula in **A0 building**. The name of the winner will be announced during the closing plenary session on Wednesday.

PhysioNet/Computing in Cardiology Challenge 2012

Since 2000, Computing in Cardiology has annually issued a PhysioNet Challenge in cooperation with PhysioNet, part of the NIH sponsored Research Resource for Complex Physiologic Signals. The

aim of this year's challenge is Predicting ICU Mortality. The challenge sessions are on Tuesday, September 11th:

- S51 10:15 - 11:45 in **building B1** room 121, and
- S71 14:15 - 15:45 in **building B1** room 121

The winners will be announced during the closing plenary session on Wednesday.

Manuscripts

Computing in Cardiology will publish the conference proceedings containing the complete manuscripts of all presentations. A CD-ROM copy of the proceedings is usually available by the end of the year and will be mailed directly to all registrants. In addition, the complete proceedings will be freely available via the CinC web site (<http://www.cinc.org>).

For any questions about manuscripts, consult the CinC web site or contact via email Alan Murray, the Editor of the proceedings: **Alan.Murray@ncl.ac.uk**

Conference Overview

The conference begins on the afternoon of Sunday 9th with a special symposium entitled "Virtual Reality in Cardiac Surgery". A guided tour with a reception in the Wieliczka Salt Mine starts immediately at the end of the symposium. The scientific sessions of the conference begin on Monday morning. In the afternoon, the traditional social program will take place. Sessions will continue on Tuesday and Wednesday, including both oral presentations and poster sessions.

Sunday Symposium

The Sunday Symposium will be held exclusively in **U2 Auditorium**.

Part One:	13:00 - 13:30	Official Addresses
	13:30 - 14:00	Invited lecture: <i>Advances in long-term monitoring of cardiac arrhythmias</i> , W. Zareba
	14:00 - 14:30	Invited lecture: <i>Integrated, web-based solution for comprehensive, ECG-related, processes management</i> . J. Bulka
Coffee break	14:30 - 15:00	Silvermedia and Institute of Physics exhibitions in the lobby.
Part Two:	15:00 - 15:45	Exhibition about Maria Sklodowska-Curie Invited lecture: <i>Considerations on modern computer graphics as a powerful & prospective tool for future medicine and medical technology</i> , T. Szuba, M. Gajer
	15:45 - 16:30	Invited lecture: <i>The Robin Heart Story - from operation planning in virtual environment to real surgical robot experiments</i> . Z. Nawrat
	16:30 - 17:15	Invited lecture: <i>Surgical training procedures and original stands developed in FCSD and Robin Heart teleoperation show</i> . J. Sliwka, Z. Nawrat, P. Kostka, K. Rohr, W. Sadowski, K. Krzysztofik
Bus departs	17:30	parking in front of U2 Auditorium
	18:00 - 19:30	Guided tour at the Wieliczka Salt Mine
	19:30 - 22:30	Reception in an underground chamber
Bus returns	22:30 - 23:30	

Remarks concerning the visit to the Wieliczka Salt Mine.

- The descent to the mine is on foot, although the lift service may be offered to participants as required.
- The exit from the mine is via a lift with a capacity of 30 people going once per 6 minutes. The buses will leave to Krakow when fully occupied.
- The temperature in the mine is 16 degrees Celsius, so be prepared accordingly.
- Smoking is not permitted anywhere in the mine.
- Permission for taking still pictures and video is subject to extra charge.

Accordingly to the opinions of several tourists, the Wieliczka Salt Mine is worth visiting more than Krakow itself. Even if you miss the Sunday visit and reception with Computing in Cardiology participants, we recommend to make an individual arrangement in a suitable time.

Scientific Sessions

The opening ceremony of the scientific sessions begins on Monday, 10th September at 08:10 in the main **building A0**, Aula (first floor) and is immediately followed by the Rosanna Degani Young Investigator Final beginning at 08:15. All regular sessions are held in lecture rooms in **B1** and **B2 buildings**. The buildings and the rooms bear labels with the CinC sign. Please see the enclosed map of the AGH-UST campus.

Monday Social Program

Each year at CinC, Monday afternoon is set aside to facilitate a social event. This is an important part of the conference program as it allows delegates to network and relax in a more informal setting away from the scientific sessions. Please consider the following remarks:

- All participants of the Social Program are required to wear the T-shirts or the caps provided in a distinct colour for each group, as well as their CinC badges.
- As the Social Program starts immediately after the sessions, the participants should consider comfortable informal dress for the whole day.
- Adhesive labels with name will be provided for participants

wishing to leave their delegate kits in a safe storage room at the University till Tuesday morning. Please do NOT leave money, credit cards, documents, hotel keys or cameras, since you may need them during the afternoon.

The social program will commence at 13:00 on Monday with lunch at the **Krakus Restaurant**. A longstanding tradition for the Computing in Cardiology social program is that delegates can choose between Activist or Passivist activities.

The activist program will start with identifying the teams by different T-shirt colours. A treasure hunt will consist of visits to several checkpoints where the team members will have to undertake a number of tests and demonstrate their manual skills, their understanding of Krakow and its history and exhibit basic technical and medical knowledge. But do not worry, you are not expected to be an engineer, surgeon or nurse. Some of you may have to operate medical devices, stretch the muscles, control your heartbeat, solve a technical problem or will make your first steps in a (very) foreign language. Your overall scores will be very important this afternoon in order to win a special prize for your team. The hunt will be also an excellent opportunity to see and take photos of the most important places in Krakow in autumn scenery and to have a short coffee break. After the treasure hunt, buses will take you to the rustic dinner planned at Folwark Zalesie. You will discover that this kind of team-building game could result in an interesting scientific cooperation

The passivist program will begin with guided sightseeing around Krakow Old Town, leaving from AGH University of Science and Technology. Some groups will be able to obtain a quick glimpse of the picturesque Krakow streets, while others will have a chance to see the Main Square and the Wawel Castle. During this trip around the town, please pay close attention to what the tour guide will be saying! At the foot of the Wawel Castle, the tour will continue aboard a cruise ship with a calm journey up the Vistula river. As you travel along the river, many quizzes and games are scheduled, and there will be music played by a traditional wind instrument band. After about 1.5h the boat will reach its destination - the Medieval Benedictine Abbey in Tyniec. Nine centuries ago, Benedictines arrived at this place. On the rock by the Vistula river, they built a monastery, which emerges from the trees and reflects in the river. You will get a chance to see the Monastery's

architecture up close, snap some photos as well as purchase locally produced Benedictine specialties from the gift shop. Finally, participants will drive to the rustic dinner planned at Folwark Zalesie.

Monday Social Program Schedule

All participants	13:00 - 14:00	Sit down lunch served in Krakus Restaurant (first floor)
Activists	14:00 - 18:00	Treasure hunt in Krakow downtown
	18:00	Bus departs to Folwark Zalesie
Passivists	14:00 - 16:00	Guided tour of Krakow downtown
	16:00 - 18:00	Cruise on Vistula River to Tyniec Benedictine Abbey
	18:00	Bus departs to Folwark Zalesie
All participants	19:00	Rustic entertainment
	19:30	Gala dinner
	21:00	Folklore music and dances
	22:30	Bus returns to Krakow

Tuesday Evening Show

Krakus, the name of restaurant, comes from Poland's oldest student folkloristic ensemble with over 60 years of tradition and many spectacular successes in Poland and abroad. On Tuesday evening, all attendees, including accompanying guests, are invited to see a show of regional dances and music given by *Krakus Ensemble*. The regional dance show will commence at 18:30 at the **Krakus Restaurant**. It thus immediately follows the poster session and will last for approximately 1 hour.

Post conference tours

A variety of one-day and longer post conference tours are available to the CinC attendees and accompanying persons. Although advance reservation is required, the tourist agency will accept last minute bookings depending on the availability of places.

For further information, please contact the Tourist Agency **VipTour**:
by phone: +48 602805548, or email: agnes@viptour.com,

Learn your first words in Polish

Yours (probably) first words in Polish		
English	Polish	phonetic transcription
good morning / good afternoon	dzień dobry	djyen' <u>dobrii</u> ¹
goodbye	do widzenia	do vee- <u>dzen</u> 'ya
hi	cześć	<u>ches</u> 'tch'
please	proszę	<u>prros</u> sheh
thank you	dziękuję	djyen' <u>kooyeh</u>
I'm sorry/ excuse me	przepraszam	pshe- <u>prras</u> ham
yes	tak	tak
no	nie	n'yeh
I don't understand	nie rozumiem	n'yeh rro- <u>zoom</u> -yem
Polish	po polsku	po <u>pol</u> skaa
to speak	mówić	<u>moov</u> itch
to listen	słuchać	<u>swoo</u> hatch
to help	pomóc	pomoots
to buy	kupić	<u>koop</u> eech'
złoty	złoty	zwoti
exchange money	wymienić pieniądze	vimy' <u>enitch</u> p-yen' <u>yondzeh</u>
cash machine	bankomat	bank <u>g</u> mat
ticket	bilet	beelet
taxi	taksówka	tak <u>soo</u> fka
car	samochód	samo- <u>hoot</u>
bus	autobus	ahwt <u>o</u> boos
tram	tramwaj	<u>tr</u> amvay
plane	samolot	samo <u>l</u> ot
train	pociąg	<u>po</u> tch'yonk
bicycle	rower	<u>rr</u> overr

¹ ref: Polish phrase book & dictionary, Berlitz

how to go to...	jak iść do ... ?	yak ysh'ts do ... ?
to the right	w prawo	f p <u>r</u> ravo
to the left	w lewo	f levo
straight	prosto	prrosto
conference	konferencja	konfer <u>r</u> ents-ya
building	budynek	bood <u>i</u> nek
proceedings	obrazy	obr <u>r</u> adi
beginning	początek	pot <u>ch</u> ontek
the end	koniec	kon'iets
my name is...	mam na imię...	mam na eem'yeh ...
good	dobrze	dobzheh
badly / ill	źle	zh'leh
very	bardzo	b <u>a</u> rrdzo
a little / some	trochę	trroheh
how much/ how many	ile	e <u>e</u> leh
I'm from	pochodzę z ...	po <u>h</u> odzeh s ...
church	kościół	kosh'tch'yoow
museum	muzeum	moo- <u>z</u> e-oom
university	uniwersytet	ooniversitet
shop	sklep	s- <u>k</u> lep
office	biuro	b-yoorroo
place	miejsce	m'i <u>e</u> ystse
market	rynek	rrinek
street	ulica	ool <u>i</u> tsa
coffee shop / cafe	kawiarnia	kav-yarm'a
restaurant	restauracja	rrestahw-rr <u>a</u> ts-ya
attention	uwaga	oovaga
book	książka	k-sh'yonsh-ka
ballpen / ballpoint	długopis	dwo <u>o</u> gopees
see you ☺	do zobaczenia ☺	do zobachen'ia ☺

Scientific Sessions Program Overview

Monday, Sep. 10th

8:10	Welcome addresses	bldg. A0, Aula
8:15	M1 Rosanna Degani Young Investigator Finals	bldg. A0, Aula
9:45	Break	
10:15	S21 Electrocardiography I	bldg. B1 room 121
	S22 Modeling Technology	bldg. B1 room H24
	S23 ECG Technology	bldg. B2 room 100
	S24 Novel Techniques in Signal Proc.	bldg. B2 room 140
11:15	Coffee break	bldgs. B1-B2 junction
11:30	S31 Medical Informatics I	bldg. B1 room 121
	S32 Clinical Correlates of ECG	bldg. B1 room H24
	S33 Atrial Modeling	bldg. B2 room 100
	S34 Cardiac Ultrasound Imaging	bldg. B2 room 140
13:00	Lunch and Social Event	Krakus, first floor

Tuesday, Sep. 11th

8:15	S41 Physiological Variability	bldg. B1 room 121
	S42 Atrial Fibrillation I	bldg. B1 room H24
	S43 Medical Informatics II	bldg. B2 room 100
	S44 Ventricular Modeling: Ionic Basis	bldg. B2 room 140
9:45	Coffee break	bldgs. B1-B2 junction
10:15	S51 CinC Challenge I	bldg. B1 room 121
	S52 Novel Approaches to Heart Rate Variability	bldg. B1 room H24
	S53 Ventricular Modeling	bldg. B2 room 100
	S54 Mobile Healthcare in Cardiology	bldg. B2 room 140
11:45	Break	
12:00	S61 Ischemia and Infarction	bldg. B1 room 121
	S62 Electrophysiology	bldg. B1 room H24
	S63 MRI/CT for Perfusion, Viability, and Texture	bldg. B2 room 100
	S64 Electrocardiography II	bldg. B2 room 140
13:00	Lunch	Krakus, first floor
14:15	S71 CinC Challenge II	bldg. B1 room 121
	S72 Heart Rate Variability	bldg. B1 room H24
	S73 Cardiac Repolarization	bldg. B2 room 100
	S74 Modeling of Ischemia and Cardiac Electromech	bldg. B2 room 140
15:45	Break	
16:00	P8 Poster session	Krakus, ground floor
18:30	Regional dance show,	Krakus, first floor

Wednesday, Sep. 12th

8:15	S91 Cardiac MRI	bldg. B1 room 121
	S92 Atrial Fibrillation II	bldg. B1 room H24
	S93 Cardiac Mechanics	bldg. B2 room 100
	S94 Ventricular Modeling: Arrhythmia	bldg. B2 room 140
9:45	Break	
10:00	PA Poster session	Krakus, ground floor
12:15	Light lunch (self service)	Krakus, first floor
13:30	MC Closing plenary session,	bldg. A0, Aula
14:30	CC Closing ceremony	bldg. A0, Aula