

Part 1: Working Group on: Computers in Cardiology

Nucleus composition:

Chairperson: Nico Bruining, NL

Vice-chairperson: Enno van der Velde, NL

Past chairperson: Martin Höher, GE

Treasurer: George Schmidt, GE

Secretary: Marek Malik, UK

Web editor: Enno van der Velde, NL

Nucleus Members: 11

There are no specific committees

Part 2: Activities of the WG during the year

Meetings: WG Endorsed and annual Meeting:

- ▶ Computers in Cardiology; Salt lake City, Utah, USA; September 13-16 2009; number of participants approximately 350-400. See attachment below for a full report concerning this meeting.

Papers & Guidelines

Papers in preparation:

- ▶ In joint cooperation with the council for cardiovascular imaging: Challenges in digital imaging: an awareness paper. The first round of collecting sub-paragraphs is almost finished, although we have some delay due to the busy schedules of the contributors. We do hope to get a completed first total draft version before the annual ESC meeting.
- ▶ The editor of the EHJ has granted, on request of the chairman of the WG, the WG to publish a short introduction paper concerning the activities of the WG and to let the clinicians know that there is a group of biomedical engineers available to help to solve clinical problems and to let the engineers know what is needed in clinical practice, in the Cardiopulse section of the EHJ. This paper is under preparation together with our sister organization Computing in Cardiology (formerly known as Computers in Cardiology) and will be submitted shortly to the EHJ.

Sessions

- ▶ ESC annual congress (Stockholm, 2010):
 - Challenges in modern angiography
 - Chair: N. Bruining (Rotterdam, NL)
 - Chair: P.J.E. Erne (Luzern, CH)
 - Imaging pitfalls in the catheterisation laboratory, M. Hoehner (Bayreuth, DE)
 - How to deal with the increasing imaging demand, N.J.J.H. van der Putten (Rotterdam, NL)
 - Radiation risk management, O. Bar (Tours, FR)
 - Hybrid catheterisation laboratories, M.R. Williams (New York, US)
 - Advanced electrocardiogram methods for cardiac risk stratification
 - Chair: E van der Velde (Leiden, NL)
 - Chair: P.M. Clemmensen (Copenhagen, DK)
 - Advances in heart rate variability assessment, F. Lombardi (Milan, IT)
 - Advances in baroreflex sensitivity assessment, M.T.A. La Rovere (Montesano, IT)
 - T-Wave morphology and cardiac risk, M. Malik (Purley, GB)
 - Multivariate cardiac risk assessment, G. Schmidt (Munich, DE)
- ▶ Euroecho (Copenhagen, 2010):
 - Tele-echocardiography: is it the future?
 - Chair: N. Bruining (Rotterdam, NL)
 - Chair: W.R.M. Dassen (Maastricht, NL)
 - The clinical need for tele-echocardiography, J.R.T.C. Roelandt (Rotterdam, NL)
 - Principles of tele-echocardiography and image compression, D. Giansantini (Rome, IT)
 - A multimodality image environment, N.H.J.J. van der Putten (Rotterdam, NL)
 - The next step: remote controlled robotic arm for real-time echocardiography, K.O.A. Boman (Skelleftea, SE)

Part 3: Future and on-going projects:

- ▶ We are member of the DICOM committee on behalf of the ESC. However, we do find difficulties getting the duties for the ESC paid (We do have to pay \$2500 as biomedical organization to stay member). We do hope this is resolved soon as the situation at the moment is at status-quo and the chairman of the WG does not know what to answer to the outside world on behalf of the ESC.
- ▶ The ACC asked the WG to become member of the IHE on behalf of the ESC. Proposal forwarded to the board of the ESC, was supposed to be briefed about the thoughts of the board after the spring meeting in which it should have been discussed, however, unfortunately no update yet (status at June the 25th).
- ▶ The WG will participate and, where appropriate, co-sponsor the scientific programme of:
 - EurEcho,
 - EuroPCR,
 - EHRA (particularly in relation to e-Health Summit and Imaging Policy)

- Conference),
 - Neurocard,
 - ISHNE winter meeting, and
 - New Echocardiographic and Biomedical Engineering Approaches for MV Prolapse Assessment and Surgery: The Surgaid Project.
- ▶ The relevant Members of the Nucleus shall consider writing a position statement on the disadvantages of making the regulatory approval of medical software too similar to the regulatory approval of new pharmaceuticals.
 - ▶ The chairman of the WG (e.g. Nico Bruining) will present at the annual Computing in Cardiology meeting (<http://cinc2010.org/>), from 22-26 September, Belfast, Northern Ireland, a presentation to promote the links between the biomedical engineering community and the medical expertise during the main session.
 - ▶ Marek Malik is responsible for our sponsorship of the consensus statement on T Wave Alternans which is primarily being developed by the International Society for Holter and Noninvasive Electrocardiology (ISHNE) and which is co-sponsored by our Working Group as well as by other scientific societies. Marek will inform the Nucleus about the progress at the next meeting in Stockholm.

Budget for 2011-2012

- Income is 1500 Euro from ESC
- Main expenses has been our extra nucleus meeting in March, did not receive a financial update from the hearthouse financial department yet.
- There are at the moment no expenses expected from the "normal" account, although this may change during the annual meeting of the ESC in September as the new chairman (e.g. Enno van der Velde) takes over. Three nucleus members have been invited to actively participate into the Euroecho meeting in December on behalf of the cooperation between the WG and the EAE, some travel expenses might be expected.
- I assume the new chairman also would like to make use of the availability of the possibility to organize an extra nucleus meeting outside the annual meeting during the ESC congress. So I estimate that this spring meeting, of which the expenses of this year are yet unknown are to be expected for 2011.

Attachment

Computers in Cardiology Annual Conference Park City, USA - September 2009

Computers in Cardiology exists to encourage inter-disciplinary communication among cardiologists and other clinicians, engineers, computer scientists and physical scientists, and physiologists. The annual meeting is the most important meeting of the *Computers in Cardiology* Working Group of the European Society of Cardiology. The Chair of this Working Group is Dr Nico Bruining, and he is on the Board of Directors. This Board includes worldwide representation to ensure *Computers in Cardiology* is truly international.

In 2009, we met in September in Park City, Utah where the annual conference was ably chaired by Sheri and Matt Prucka of Prucka Engineering. The local committee consisted of Thida Crouse, Roger Freedman, Tobin Lim, Robert Lux, Peter Macfarlane, Brent Muhlestein, Rob MacLeod, Steve Poelzing, Steve Swiryn and Deborah Zemek.

The opening symposium focused on an area of local interest, as well as of much general interest. The organizers chose to feature the Scientific Computing and Imaging Institute (SCI) at the University of Utah, with international research leading in the areas of scientific computing, visualization and image analysis. Their focus

is on solving important problems in biomedicine, science and engineering using computation. The speakers, Rob Macleod, Brent Muhlestein, Ed DiBella, Frank Sachse, Ross Whitaker, Dana Brooks and Chris Johnson produced a superb symposium.

The main *Computers in Cardiology* conference opened the following day with presentations for the Rosanna Degani Young Investigator Award, which was won by Kun Wang, a PhD student from Newcastle University, UK. The winning paper was "A Comparison of 2D and 3D Edge Detectors in Semi-Automated Measurements of Chamber Volumes Using 3D Echocardiographic Laboratory Phantom Images".

There were 33 sessions over the 3 day period. This might seem a hectic program, but the meeting is very deliberately designed to give participants time to interact and discuss, especially on the opening day. I can give only a brief outline of the research presented. All aspects of computerised imaging, as would be expected in Utah, were well featured, with three-dimensional aspects of echocardiography and cardiac MRI featuring strongly. There were also sessions on computational electrocardiography, modelling, myocardial perfusion, LV function, blood pressure, heart rate variability, as well as continuing advances in cardiology information systems and telemedicine.

The *Computers in Cardiology Challenge*, which celebrated its 10th anniversary, has become an exciting and important feature of the meeting. This year it was dedicated to the memory of Solange Akselrod, through the generous support of her family and the CinC Board of Directors. The Challenge has developed from the first one, which was to detect sleep apnoea from the ECG alone, followed by detection of patients at risk of atrial fibrillation, simulations of heart rate variability, detecting ischaemic ST changes, and prediction of atrial fibrillation. Entries to this year's Challenge were to predict episodes of hypotension in intensive care. As in previous years, the competition raised lots of excitement, along with calls for further challenges. The data for all challenges are still on 'PhysioNet' (www.physionet.org). Help keep these challenges alive. Winners this year were Xiaoxiao Chen from the USA and Jorge Henriques from Portugal, along with their co-workers.

As always in my reports, I end with reference to the Poster Session. This year again there were two sessions. They were among the most popular sessions at *Computers in Cardiology*, with almost everyone turning up. As usual, there was so much discussion that delegates had to be encouraged to leave, when it was well past the official end of the session.

Hopefully you are now interested enough to want to look at the Proceedings. They were published in November 2009, less than two months after the meeting, and contain 212 manuscripts in xxx pages. The papers are indexed, so you should be able to find them easily. *Computers in Cardiology 2009*, volume 36 is published on the *Computers in Cardiology* website (cinc.org). With the copyright of papers held by authors, they are freely available to all. The volume is also published by IEEE. Everyone who came to the conference also received the proceedings on CD.

I and all other Members of the ESC Working Group hope that we have encouraged you to come to *Computers in Cardiology 2010*. It will be hosted by the University of Ulster, and will be held in Belfast, Northern Ireland, UK from 26-29 September 2010, under the chair of Dewar Finlay and Chris Nugent. For more information, go to <http://www.cinc2010.org>
We hope to see you there.

Alan Murray
Editor, *Computers in Cardiology*

<http://www.cinc.org> (*Computers in Cardiology* Home Page)