

Guest-editorial

Special issue “Technology and Health Care” on the 3rd European Conference on Engineering and Medicine

In the last decades, medicine is becoming more and more dependent on technologies. This is particularly evident at the level of diagnosis (medical imaging, biological signal processing, modelling) at the therapeutic level (cardiac prostheses, endoprostheses, medical implants, minimally invasive surgery) and at the rehabilitation level (limb prosthesis, technical aids for sensory and motor disabilities).

The recent technological developments and the improvement of knowledge in biology and physiopathology are presently in a phase in which a strict interdisciplinary approach is required to improve research and clinical application in this area.

This special issue of “Technology and Health Care” is devoted to selected papers derived from the 3rd European Conference on Engineering and Medicine, promoted by ESEM (European Society of Engineering and Medicine).

The sub-title of this Conference was “A bridge between Engineering and Medicine” and this points out the main spirit of it, that is, to bring scientists and researchers, engineers and clinicians concerned with biomedical engineering and technology in health care closer together. The Conference has been organised by the Bioengineering Centre, the Politecnico of Milano, the Pro Juventute Foundation and sponsored by the Commission of the European Union and several European Medical Societies, under the patronage of the Italian Ministry of Health.

Prof. Pierre Rabischong, from the University of Montpellier (F) was its President.

Nearly 700 participants attended the Conference from 30 different countries. The conference started with a full day tutorials “Pre-Conference Top Courses”.

The main Conference was divided into 28 parallel sessions and several specific symposia devoted to European Health Policy, in Medical Imaging and Education in Bioengineering. A special round table ‘*Inter program collaboration in the European Union*’, with regards to E.U. research programs covering aspects of biomedical engineering and technology, was also organised with the participation of relevant Commission staff representing the following European programmes: BIOMED, TIDE, MEASUREMENT AND TESTING, HEALTH CARE TELEMATICS. Another important feature of the Conference has been a multimedia event ‘*Future Medicine 2005*’, organised at the end of each day, presenting, mostly with videos, some fascinating technical developments in implants, orthopaedics, imaging, minimal invasive surgery, etc.

One successful innovation concerned “sectorial days” devoted, respectively, to *Bioimaging techniques, Medical implants and Artificial organs, Biosignal processing, Modelling and Medical networks* which particularly attracted a mixed audience of clinicians and technical researchers reinforcing the link between technical problems and clinical applications.

During the morning plenary sessions high level invited lectures by either engineers or clinicians presented the state-of-the-art around each topic of the sectorial days. The fruitful discussions provided a strong contribution for defining a European policy for the future research and development of European industries in Biomedical Technologies.

The participation of almost all project leaders of the 45 ongoing BIOMED projects which also provided presentations at the scientific sessions, contributed significantly to the success of the Conference.

A one day workshop and a permanent poster session were specifically dedicated to the presentation of the objectives of the ongoing BIOMED projects giving the opportunity to convey the results to the relevant scientific community at large, and assess the validity of the evaluation process.

In this special issue a selection of the most interesting lectures held at the Conference is presented. They include review articles concerning some of the fastest developing areas like cellular engineering, ultrasound, PET, artificial heart and telematics in health care. Selected original contributions deal with new methodologies and technologies in biosignal processing and clinical application to improve diagnosis and interpretation of medical data.

I would like to express my gratitude to all experts and institutions who have allowed the success of the Conference and, in particular, I would like to thank Prof. Pierre Rabischong, the ESEM Council, the International Scientific Committee and the Local Organising Committee who made an important contribution to the scientific design and practical organisation of the Conference.

Prof. Antonio Pedotti
Congress Chairman