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EDITORIAL

The Nightingale Prize 2010 for best MBEC paper in 2009 awarded

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In 2012 our journal will exist 50 years reflecting that it is one of the oldest Biomedical Engineering journals. The first Editor in Chief of *Medical & Biological Engineering & Computing*, MBEC, was Alfred Nightingale. In 1963 he died at the age of 40 and therefore has not seen much of his accomplishments for the journal [17]. He was a promising scientist and pioneer in the field of electromyography [15]. In his honor the Nightingale prize was established in cooperation between the Institute of Physics and Engineering in Medicine (http://www.ipem.org.uk/ipem_public) and the International Federation of Medical and Biological Engineering (http://ifmbe.org/). The prize is yearly awarded to the best paper in the preceding year to be determined by the editors of MBEC.

It seems straightforward to select the paper with the highest citation score to a certain year. However, the prize is intended to recognize a paper that has been published only recently and biomedical engineering papers do not collect citations so fast to allow citation frequency to be used as a selection criterion [18]. Hence, we followed the same routine as last year and selected those that received a priority of 90% of higher from the reviewers [19]. We excluded the rather senior authors from the three special issues which contributed a lot to our success for 2009 [2, 4, 20]. We mention these top 13 papers in this editorial as to provide credit to the authors who submitted excellent work to the journal. Thanks to such submissions our impact factor has increased from 1.38 in 2008 to 1.76 this year.

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The selected winner of this year is the paper by L. P. Li, J. T. M. Cheung and W. Herzog from the Department of Mechanical and Manufacturing Engineering, University of Calgary, Canada, with a contribution titled "Three-dimensional fibril-reinforced finite element model of articular cartilage" [11]. One of the reviewers wrote: 'Li et al. have further developed their earlier published fibril-reinforced model of articular cartilage to include a 3D collagen fibril network. Expectedly, they find that the axisymmetric and 3D model geometry differ in deformation and also somewhat in reaction forces. The figures in this paper are well presented. The findings of this study, while being quite obvious, are important and emphasize how articular cartilage models can be made more realistic by simulating the third geometric dimension'. The paper was published in June 2009 and now, a little over a year, it has been cited four times.

MBEC is a journal where Biomedical Engineers from all directions of research can find a platform for publication. Yet, certain strong representations of some specific research fields exist. One of the fields is cardiovascular as is witnessed by the following papers. Potse et al. [14] introduced extracellular in addition to intracellular anisotropy into the models that predict ECG signals. Also the work of Farina et al. [5] was directed to the ECG but then to accelerate computational methods. Ferrario et al. [6] developed a method for fetal heart rate variability in order to identify early intrauterine growth-restriction of the fetuses. Richter et al. [16] developed techniques to quantify the propagation pattern of the electrical activation during atrial fibrillation (AF). Electric cardioversion is a standard therapy for halting AF and Alcaraz et al. [1] analyzed the ability of a non-linear regularity index to follow-up non-invasively AF organization under successive attempts of ECV and to predict the effectiveness of every single shock.

Cardiovascular papers not related to the electrical cardiac phenomena also made it to the short list of top publications. Hughes et al. [9] compared to methods for studying arterial wave propagation based on the more classical method of characteristic impedance and the novel developed method of wave intensity [13]. Zolgharni et al. [21] studied a method for detecting hemorrhagic cerebral stroke by magnetic induction tomography. Leguy et al. [10] studied the effect of assumed flow velocity profile, Poiseuille versus Womersley, in a straight vessel on the estimation of dynamic arterial blood volume flow from ultrasound measurements.

All kinds of methods for measurement of the wellbeing of patients and especially the elderly at home are presented in the journal. The study of Hong et al. received great appreciation of the reviewers and was directed to the development of a method to estimate abdominal fat by bioelectrical impedance analysis from electrodes incorporated in a toilet seat [8]. Electrical stimulation of tissue by needle electrodes forms the basis of several therapeutic interventions and the prediction of potential and activation functions around such needles are needed for optimization. Guo et al. [7] derived some useful analytic formulae for these functions.

Also the muscular–skeletal system is an important organ system for our journal. Blana et al. [3] described a functional electrical stimulation controller using a combination of feed-forward and feed-back for arm control in high-level injury. Pages et al. [12] presented a method for restoring standing in paraplegia by using functional electrical stimulation (FES). In order to arrive at an efficient closed-loop control system the relationship between body posture and voluntary upper body movements was studied.

On behalf of the editors, IPEM and IFMBE, I wholeheartedly congratulate the winner of the Nightingale Prize 2009. However, also the other top scorers should be congratulated with their excellent contributions.

As always, we are grateful to IPEM and IFMBE for maintaining the Alfred Nightingale Prize.

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