
Introduction

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Biographical notes: Nilmini Wickramasinghe has an internationally recognised research record in the area of healthcare and technology management. Her expertise is in the strategic application and management of technology for effecting superior healthcare solutions. As of 13th December 2009 she was appointed the Professor of Information Management and Library Science in the School of Business IT and Logistics at RMIT University. She currently has over 200 peer-reviewed scholarly publications and is the author of several books and an Encyclopaedia in Healthcare and Technology. In addition, she is the Editor-in-Chief of two scholarly international peer-reviewed scholarly journals published by Inderscience.

In general, healthcare has been slow to embrace technology to facilitate and support superior delivery. However, one sterling exception has been the area of biomedical engineering, a field that applies engineering principles and techniques to medicine to improve healthcare diagnosis and treatment. In fact, technology and the application of leading, if not bleeding edge technologies, is what has made this field so successful be it with regard to the area of imaging, diagnosis or treatment. In one special issue, it is not possible to cover in depth one area let alone all areas of this dynamic and vibrant field. This special issue then serves to provide the readers with a taste of some of the research endeavours within the field of biomedical engineering and technology, with the hope that this will spark even more research and interest. Specifically, the six papers that make up this issue are as follows:

The first paper, 'Foetal ECG extraction using combination of wavelets and hybrid-algorithm-based ANFIS' by Swarnalatha and Prasad, proposes a new method of fetal monitoring using a combination of hybrid soft-computing technique called Adaptive Neuro Fuzzy Inference system (ANFIS) along with wavelets to provide superior monitoring of the baby's heart.

The second paper, 'Automated ischemic beat classification using Genetic Algorithm based Principal Component Analysis', by Murugan and Radhakrishnan examines the use of intelligence techniques such as genetic algorithms to facilitate better classification of ischaemic beats.

The third paper, 'Phase tracking of the breathing cycle in sleeping subjects by frequency analysis of acoustic data', by Alshaer et al. presents the results of a study conducted in Canada to detect breathing phases and the implications of differences in breathing phases.

The fourth paper, 'Multi-purpose healthcare telemedicine system with ISM band communication link support', by Hamza et al. examines the design and development of wireless biomedical sensor network prototypes.

The fifth paper, 'A novel approach for non-invasive measurement of blood haemoglobin', by Chaskar et al. describes the clinical importance and implications of the introduction of a new medical device with regard to measuring blood haemoglobin.

The final paper of this special issue 'Evaluation of fatigue crack growing in cortical bone using the BEM' by Gámez et al. discusses ways to identify fatigue cracks in bones.

As can be seen, taken together these papers represent only a brief insight into the fascinating field of biomedical engineering. The papers do address various issues pertaining to the monitoring, diagnosing and treatment of patients in a multiplicity of contexts and serve to demonstrate the key role technology plays in effecting these solutions. In closing, I hope the reader enjoys this little interlude into the world of biomedical engineering and is inspired to uncover more opportunities for technology to facilitate superior healthcare delivery.