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Preface

This book contains the best papers of the First International Joint Conference on Biomedical Engineering Systems and Technologies (BIOSTEC 2008), organized by the Institute for Systems and Technologies of Information Control and Communication (INSTICC), technically co-sponsored by the IEEE Engineering in Medicine and Biology Society (EMB), ACM SIGART and the Workflow Management Coalition (WfMC), in cooperation with AAAI.

The purpose of the International Joint Conference on Biomedical Engineering Systems and Technologies is to bring together researchers and practitioners, including engineers, biologists, health professionals and informatics/computer scientists, interested in both theoretical advances and applications of information systems, artificial intelligence, signal processing, electronics and other engineering tools in knowledge areas related to biology and medicine.

BIOSTEC is composed of three co-located conferences; each specializes in one of the aforementioned main knowledge areas, namely:

- BIODEVICES (International Conference on Biomedical Electronics and Devices) focuses on aspects related to electronics and mechanical engineering, especially equipment and materials inspired from biological systems and/or addressing biological requirements. Monitoring devices, instrumentation sensors and systems, biorobotics, micro-nanotechnologies and biomaterials are some of the technologies addressed at this conference.
- BIOSIGNALS (International Conference on Bio-inspired Systems and Signal Processing) is a forum for those studying and using models and techniques inspired from or applied to biological systems. A diversity of signal types can be found in this area, including image, audio and other biological sources of information. The analysis and use of these signals is a multidisciplinary area including signal processing, pattern recognition and computational intelligence techniques, amongst others.
- HEALTHINF (International Conference on Health Informatics) promotes research and development in the application of information and communication technologies (ICT) to healthcare and medicine in general and to the specialized support to persons with special needs in particular. Databases, networking, graphical interfaces, intelligent decision support systems and specialized programming languages are just a few of the technologies currently used in medical informatics. Mobility and ubiquity in healthcare systems, standardization of technologies and procedures, certification, privacy are some of the issues that medical informatics professionals and the ICT industry in general need to address in order to further promote ICT in healthcare.

The joint conference, BIOSTEC, received 494 paper submissions from more than 40 countries in all continents. Of these, 65 papers were published and presented as full

papers, i.e., completed work (8 pages/30' oral presentation), 189 papers reflecting work-in-progress or position papers were accepted for short presentation, and another 86 contributions were accepted for poster presentation. These numbers, leading to a "full-paper" acceptance ratio below 14% and a total oral paper presentation acceptance ratio below 52%, show the intention of preserving a high-quality forum for the next editions of this conference. This book includes revised and extended versions of a strict selection of the best papers presented at the conference.

The conference included a panel and six invited talks delivered by internationally distinguished speakers, namely: Sergio Cerutti, Kevin Warwick, F. H. Lopes da Silva, Vipul Kashyap, David Hall and Albert Cook.

We must thank the authors, whose research and development efforts are recorded here. We also thank the keynote speakers for their invaluable contribution and for taking the time to synthesize and prepare their talks. The contribution of all Program Chairs of the three component conferences was essential to the success of BIOSTEC 2008. Finally, special thanks to all the members of the INSTICC team, whose collaboration was fundamental for the success of this conference.

September 2008

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Kevin Warwick	University of Reading, UK
Fernando Henrique Lopes da Silva	University of Amsterdam, The Netherlands
Vipul Kashyap	Partners HealthCare System, Clinical Informatics R&D, USA
David Hall	Research Triangle Institute in North Carolina, USA
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