Preface

The present book includes extended and revised versions of a set of selected papers from the Sixth International Joint Conference on Biomedical Engineering Systems and Technologies (BIOSTEC 2013), held in Barcelona, Spain from February 11 to 14, 2013.

BIOSTEC was sponsored by the Institute for Systems and Technologies of Information, Control and Communication (INSTICC), in collaboration with the University of Vic.

BIOSTEC 2013 was held in cooperation with the Association for the Advancement of Artificial Intelligence (AAAI) and technically co-sponsored by the Biomedical Engineering Society (BMES) and European Society for Engineering and Medicine (ESEM).

The purpose of the International Joint Conference on Biomedical Engineering Systems and Technologies is to bring together researchers and practitioners 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 four complementary and co-located conferences, each specialized in at least one of the aforementioned main knowledge areas. Namely:

– International Conference on Biomedical Electronics and Devices – BIODEVICES;
– International Conference on Bioinformatics Models, Methods, and Algorithms – BIOINFORMATICS;
– International Conference on Bio-inspired Systems and Signal Processing – BIOSIGNALS;
– International Conference on Health Informatics – HEALTHINF.

The purpose of the International Conference on Biomedical Electronics and Devices (BIODEVICES) is to bring together professionals from electronics and mechanical engineering, interested in studying and using models, 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.

The International Conference on Bioinformatics Models, Methods, and Algorithms (BIOINFORMATICS) intends to provide a forum for discussion to researchers and practitioners interested in the application of computational systems and information technologies to the field of molecular biology, including for example the use of statistics and algorithms to understanding biological processes and systems, with a focus on new developments in genome bioinformatics and computational biology. Areas of interest for this community include sequence analysis, biostatistics, image analysis, scientific data management and data mining, machine learning, pattern recognition, computational evolutionary biology, computational genomics, and other related fields.

The goal of the International Conference on Bio-inspired Systems and Signal Processing (BIOSIGNALS) is to bring together researchers and practitioners from multiple areas of knowledge, including biology, medicine, engineering, and other physical sciences interested in 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, among others.

The International Conference on Health Informatics (HEALTHINF) aims to be a major meeting point for those interested in understanding the human and social implications of technology, not only in healthcare systems but in other aspects of human–machine interaction such as accessibility issues and the specialized support to persons with special needs.

The joint conference, BIOSTEC, received 392 paper submissions from 57 countries in all continents. To evaluate each submission, a double-blind paper review was performed by the Program Committee. After a stringent selection process, 56 papers were published and presented as full papers, i.e., completed work (10 pages/30 minute oral presentation), 99 papers reflecting work-in-progress or position papers were accepted for short presentation, and another 88 contributions were accepted for poster presentation. These numbers, leading to a full-paper acceptance ratio of about 14 % and a total oral paper presentations acceptance ratio close to 40 %, show the intention of preserving a high quality forum for the next editions of this conference.

BIOSTEC's program includes panels and six invited talks delivered by internationally distinguished speakers, namely: Pedro Gómez Vilda (Universidad Politécnica de Madrid, Spain), Christian Jutten (GIPSA-lab, France), Adam Kampff (Champalimaud Foundation, Portugal), Richard Reilly (Trinity College Dublin, Ireland), Vladimir Devyatkov (Bauman Moscow State Technical University, Russian Federation), and Pietro Liò (University of Cambridge, UK).

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