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Biomedical Engineering Systems and Technologies

7th International Joint Conference, BIOSTEC 2014
Angers, France, March 3–6, 2014
Revised Selected Papers

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Preface

The present book includes extended and revised versions of a set of selected papers from the 7th International Joint Conference on Biomedical Engineering Systems and Technologies (BIOSTEC 2014), held in Angers, Loire Valley, France, during March 3–6, 2014.

Co-organized by the ESEO Group, BIOSTEC was sponsored by the Institute for Systems and Technologies of Information, Control and Communication (INSTICC), in cooperation with the Special Interest Group on Artificial Intelligence (ACM Sigart), the Special Interest Group on Bioinformatics, Computational Biology, and Biomedical Informatics (ACM SIGBio), the Association for the Advancement of Artificial Intelligence (AAAI), EUROMICRO, and the International Society for Telemedicine & eHealth (ISfTeH). BIODEVICES was also technically co-sponsored by the European Society for Engineering and Medicine (ESEM), the Biomedical Engineering Society (BMES), and IEEE Engineering in Medicine and Biology Society (IEEE EMBS).

The main objective of the International Joint Conference on Biomedical Engineering Systems and Technologies is to provide a point of contact for 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 five 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 Bioimaging - BIOIMAGING
- 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 Bioimaging (BIOIMAGING) encourages authors to submit papers to one of the main conference topics, describing original work, including methods, techniques, advanced prototypes, applications, systems, tools, or survey papers, reporting research results and/or indicating future directions.

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 understand 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 health-care 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 362 paper submissions from 59 countries, which demonstrates the success and global dimension of this conference. From these, 51 papers were published as full papers, 86 were accepted for short presentation, and another 93 for poster presentation. These numbers, leading to a “full-paper” acceptance ratio of about 14 % and an oral paper acceptance ratio close to 38 %, show the intention of preserving a high-quality forum for the next editions of this conference.

We would like to thank all participants. First of all the authors, whose quality work is the essence of the conference, and the members of the Program Committee, who helped us with their expertise and diligence in reviewing the conference papers. Last but not least, we would like to express our gratitude to the INSTICC staff for their excellent organizational support. Without their help, this conference would not happen.

April 2015

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