

BIOTECHNO 2012

Foreword

The Fourth International Conference on Bioinformatics, Biocomputational Systems and Biotechnologies (BIOTECHNO 2012), held between March 25-30, 2012 - St. Maarten, Netherlands Antilles, covered these three main areas: bioinformatics, biocomputational systems, and biotechnologies.

Bioinformatics deals with the system-level study of complex interactions in biosystems providing a quantitative systemic approach to understand them and appropriate tool support and concepts to model them. Understanding and modeling biosystems requires simulation of biological behaviors and functions. Bioinformatics itself constitutes a vast area of research and specialization, as many classical domains such as databases, modeling, and regular expressions are used to represent, store, retrieve and process a huge volume of knowledge. There are challenging aspects concerning biocomputation technologies, bioinformatics mechanisms dealing with chemoinformatics, bioimaging, and neuroinformatics.

Brain-computing, biocomputing, and computation biology and microbiology represent advanced methodologies and mechanisms in approaching and understanding the challenging behavior of life mechanisms. Using bio-ontologies, biosemantics and special processing concepts, progress was achieved in dealing with genomics, biopharmaceutical and molecular intelligence, in the biology and microbiology domains. The area brings a rich spectrum of informatics paradigms, such as epidemic models, pattern classification, graph theory, or stochastic models, to support special biocomputing applications in biomedical, genetics, molecular and cellular biology and microbiology. While progress is achieved with a high speed, challenges must be overcome for large-scale bio-subsystems, special genomics cases, bio-nanotechnologies, drugs, or microbial propagation and immunity.

Biotechnology is defined as the industrial use of living organisms or biological techniques developed through basic research. Bio-oriented technologies became very popular in various research topics and industrial market segments. Current human mechanisms seem to offer significant ways for improving theories, algorithms, technologies, products and systems. The focus is driven by fundamentals in approaching and applying biotechnologies in terms of engineering methods, special electronics, and special materials and systems. Borrowing simplicity and performance from the real life, biodevices cover a large spectrum of areas, from sensors, chips, and biometry to computing. One of the chief domains is represented by the biomedical biotechnologies, from instrumentation to monitoring, from simple sensors to integrated systems, including image processing and visualization systems. As the state-of-the-art in all the domains enumerated in the conference topics evolve with high velocity, new biotechnologies and biosystems become available. Their rapid integration in the real life becomes a challenge.

We welcomed technical papers presenting research and practical results, position papers addressing the pros and cons of specific proposals, such as those being discussed in the standard forums or in industry consortia, survey papers addressing the key problems and solutions on any of the above topics short papers on work in progress, and panel proposals.

We take here the opportunity to warmly thank all the members of the BIOTECHNO 2012 technical program committee as well as the numerous reviewers. The creation of such a broad and high quality conference program would not have been possible without their involvement. We also kindly thank all the authors that dedicated much of their time and efforts to contribute to BIOTECHNO 2012. We truly believe that, thanks to all these efforts, the final conference program consisted of top quality contributions.

We hope that BIOTECHNO 2012 was a successful international forum for the exchange of ideas and results between academia and industry and to promote further progress in biotechnology.

We are certain that the participants found the event useful and communications very open. The beautiful places of St. Maarten surely provided a pleasant environment during the conference and we hope you had a chance to visit the surroundings.

BIOTECHNO 2012 Chairs

Stephen Anthony, The University of New South Wales, Australia

Petre Dini, Concordia University, Canada / China Space Agency Center-Beijing, China