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Preface

The International Conference on Life System Modeling and Simulation (LSMS) was formed to bring together international researchers and practitioners in the field of life system modeling and simulation as well as life system-inspired theory and methodology.

The concept of a life system is quite broad. It covers both micro and macro components ranging from cells, tissues and organs across to organisms and ecologic niches. These interact and evolve to produce an overall complex system whose behavior is difficult to comprehend and predict. The arrival of the 21st century has been marked by a resurgence of research interest both in arriving at a systems-level understanding of biology and in applying such knowledge in complex real-world applications. Consequently, computational methods and intelligence in systems, biology, as well as bio-inspired computational intelligence, have emerged as key drivers for new computational methods. For this reason papers dealing with theory, techniques and real-world applications relating to these two themes were especially solicited.

Building on the success of a previous workshop in 2004, the 2007 International Conference on Life System Modeling and Simulation (LSMS 2007) was held in Shanghai, China, September 14–17, 2007. The conference was jointly organized by The Shanghai University, Queen's University Belfast together with The Life System Modeling and Simulation Special Interest Committee of the Chinese Association for System Simulation. The conference program offered the delegates keynote addresses, panel discussions, special sessions and poster presentations, in addition to a series of social functions to enable networking and future research collaboration.

LSMS 2007 received a total of 1,383 full paper submissions from 21 countries. All these papers went through a rigorous peer-review procedure, including both pre-review and formal referring. Based on the referee reports, the Program Committee finally selected 333 good-quality papers for presentation at the conference, from which 147 were subsequently selected and recommended for publication by Springer in one volume of *Lecture Notes in Computer Science* (LNCS) and one volume of *Lecture Notes in Bioinformatics* (LNBI). This particular volume of *Lecture Notes in Computer Science* (LNCS) includes 84 papers covering 6 relevant topics.

The organizers of LSMS 2007 would like to acknowledge the enormous contributions made by the following: the Advisory Committee and Steering Committee for their guidance and advice, the Program Committee and the numerous referees worldwide for their efforts in reviewing and soliciting the papers, and the Publication Committee for their editorial work. We would also like to thank Alfred Hofmann, from Springer, for his support and guidance. Particular thanks are of course due to all the authors, as without their high-quality submissions and presentations, the LSMS 2007 conference would not have been possible.

Finally, we would like to express our gratitude to our sponsor – The Chinese Association for System Simulation, – and a number of technical co-sponsors: the IEEE United Kingdom and Republic of Ireland Section, the IEEE CASS Life Science Systems and Applications Technical Committee, the IEEE CIS Singapore Chapter, the

IEEE Shanghai Section for their technical co-sponsorship and the Systems and Synthetic Biology (Springer) for their financial sponsorship. The support of the Intelligent Systems and Control group at Queen's University Belfast, Fudan University, the Shanghai Institute for Biological Sciences, the Chinese Academy of Sciences, the Shanghai Association for System Simulation, the Shanghai Association for Automation, Shanghai Association for Instrument and Control, the Shanghai Rising-star Association, the Shanghai International Culture Association, Shanghai Medical Instruments Trade Association is also acknowledged.

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