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Proceedings, Part III



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Preface

This three volume set constitutes the proceedings of the 2007 International Conference on Computational Science and its Applications, ICCSA 2007, held in Kuala Lumpur, Malaysia, from August 26–29, 2007. It represents a comprehensive collection of 300 refereed full papers selected from approximately 1,250 submissions to ICCSA 2007.

The continuous support of computational science researchers has helped ICCSA to become a firmly established forum in the area of scientific computing. This year, the collection of fully refereed high-quality original works accepted as long papers for presentation at ICCSA 2007 have been published in this LNCS volume. This outstanding collection complements the volume of short papers, published for the first time by IEEE CS. All of the long papers presented in this collection of volumes share a common theme: computational science.

Over the past ten years, since the first conference on computational science took place, this vibrant and promising area has firmly established itself as a vital part of many scientific investigations in a broad gamut of disciplines. Having deep roots in fundamental disciplines, such as mathematics, physics, and chemistry, the computational science field is finding new applications in such broad and diverse areas as aerospace and automotive industries, bioinformatics and nanotechnology studies, networks and grid computing, computational geometry and biometrics, computer education, and art. Due to the growing complexity and sophistication of many challenges in computational science, the use of sophisticated algorithms and emerging technologies is inevitable. Together, these far reaching scientific areas help to shape this conference in the realms of state-of-the-art computational science research and applications, encompassing the facilitating theoretical foundations and the innovative applications of such results in other areas.

The topics of the short refereed papers presented in this volume span all the traditional as well as the emerging computational science areas, and are structured according to the major conference themes:

- Computational Methods, Algorithms and Applications
- High Performance Technical Computing and Networks
- Advanced and Emerging Applications
- Geometric Modeling, Graphics and Visualization
- Information Systems and Information Technologies

Moreover, selected short papers from 30 workshops and technical sessions on such areas as information security, web learning, software engineering, computational intelligence, digital security, mobile communications, grid computing, modeling, optimization, embedded systems, wireless networks, computational geometry, computer graphics, biometrics, molecular structures, geographical information systems, ubiquitous computing, symbolic computations, molecular

structures, web systems and intelligence, e-printing, and education are included in this publication.

We are very grateful to the International Steering Committee and the International Program Committee for their tremendous support in putting this conference together, the nearly four hundred referees for their diligent work in reviewing the submissions, and all the sponsors, supporting organizations and volunteers of ICCSA for contributing their time, energy and resources to this event.

Finally, we thank all authors for their submissions making the ICCSA conference year after year one of the premium events on the scientific community scene, facilitating the exchange of ideas, fostering new collaborations, and shaping the future of computational science.

August 2007

Osvaldo Gervasi
Marina L. Gavrilova

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