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Preface

The four volume set assembled following *The 2005 International Conference on Computational Science and its Applications*, ICCSA 2005, held in Suntec International Convention and Exhibition Centre, Singapore, from 9 May 2005 till 12 May 2005, represents the fine collection of 540 refereed papers selected from nearly 2,700 submissions.

Computational Science has firmly established itself as a vital part of many scientific investigations, affecting researchers and practitioners in areas ranging from applications such as aerospace and automotive, to emerging technologies such as bioinformatics and nanotechnologies, to core disciplines such as mathematics, physics, and chemistry. Due to the sheer size of many challenges in computational science, the use of supercomputing, parallel processing, and sophisticated algorithms is inevitable and becomes a part of fundamental theoretical research as well as endeavors in emerging fields. Together, these far reaching scientific areas contribute 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 refereed papers span all the traditional as well as emerging Computational Science realms, and are structured according to six main conference themes:

- Computational Methods and Applications
- High Performance Computing, Networks and Optimisation
- Information Systems and Information Technologies
- Scientific Visualisation, Graphics and Image Processing
- Computational Science Education
- Advanced and Emerging Applications

In addition, papers from 27 Workshops and Technical Sessions on specific topics of interest, including information security, mobile communication, grid computing, modeling, optimization, computational geometry, virtual reality, symbolic computations, molecular structures, web systems and intelligence, spatial analysis, bioinformatics and geocomputations, to name a few, complete this comprehensive collection.

The warm reception of the great number of researchers to present high quality papers in ICCSA 2005 has taken the Conference to record new heights. The continuous support of Computational Science researchers has helped build ICCSA to be a firmly established forum in this area. We look forward to building on this symbiotic relationship together to grow ICCSA further.

We recognize the contribution of the International Steering Committee and we deeply thank the International Program Committee for their tremendous support in putting this Conference together, nearly nine hundred referees for

their diligent work, and the Institute of High Performance Computing, Singapore for their generous assistance in hosting the event.

We also thank our sponsors for their continuous support without which this Conference would not be possible.

Finally, we thank all authors for their submissions and all Invited Speakers and Conference attendants for making the ICCSA Conference truly one of the premium events in the scientific community, facilitating exchange of ideas, fostering new collaborations, and shaping the future of the Computational Science.

May 2005

Marina L. Gavrilova
Osvaldo Gervasi

on behalf of the co-editors:

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