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Transactions on Computational Science VI

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LNCS Transactions on Computational Science

Computational science, an emerging and increasingly vital field, is now widely recognized as an integral part of scientific and technical investigations, affecting researchers and practitioners in areas ranging from aerospace and automotive research to biochemistry, electronics, geosciences, mathematics, and physics. Computer systems research and the exploitation of applied research naturally complement each other. The increased complexity of many challenges in computational science demands the use of supercomputing, parallel processing, sophisticated algorithms, and advanced system software and architecture. It is therefore invaluable to have input by systems research experts in applied computational science research.

Transactions on Computational Science focuses on original high-quality research in the realm of computational science in parallel and distributed environments, also encompassing the underlying theoretical foundations and the applications of large-scale computation. The journal offers practitioners and researchers the opportunity to share computational techniques and solutions in this area, to identify new issues, and to shape future directions for research, and it enables industrial users to apply leading-edge, large-scale, high-performance computational methods.

In addition to addressing various research and application issues, the journal aims to present material that is validated – crucial to the application and advancement of the research conducted in academic and industrial settings. In this spirit, the journal focuses on publications that present results and computational techniques that are verifiable.

Scope

The scope of the journal includes, but is not limited to, the following computational methods and applications:

- Aeronautics and Aerospace
- Astrophysics
- Bioinformatics
- Climate and Weather Modeling
- Communication and Data Networks
- Compilers and Operating Systems
- Computer Graphics
- Computational Biology
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- Computational Fluid Dynamics
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- Computational Number Theory
- Computational Physics
- Data Storage and Information Retrieval
- Data Mining and Data Warehousing
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- Hardware/Software Co-design
- High-Energy Physics
- High-Performance Computing
- Numerical and Scientific Computing
- Parallel and Distributed Computing
- Reconfigurable Hardware
- Scientific Visualization
- Supercomputing
- System-on-Chip Design and Engineering

Editorial

The Transactions on Computational Science journal is part of the Springer series *Lecture Notes in Computer Science*, and is devoted to the gamut of computational science issues, from theoretical aspects to application-dependent studies and the validation of emerging technologies.

The journal focuses on original high-quality research in the realm of computational science in parallel and distributed environments, encompassing the facilitating theoretical foundations and the applications of large-scale computations and massive data processing. Practitioners and researchers share computational techniques and solutions in the area, identify new issues, and shape future directions for research, as well as enable industrial users to apply the techniques presented.

The current issue is devoted to selected best papers from the workshops comprising the International Conference on Computational Science and its Applications 2008, which took place in Perugia, Italy, from June 30th to July 3rd, 2008. The fully revised and extensively refereed versions of these papers comprise the current issue.

The 21 selected contributions originate from eight workshops: Virtual Reality in Scientific Applications and Learning (VRSAL 2008), Computational GeoInformatics (CompGeo 2008), Mobile Communications 2008 (MC 2008), Information Systems and Information Technologies (ISIT 2008), Logical, Scientific and Computational Aspects of Pulse Phenomena in Transitions (PULSES 2008), Internet Communication Security (WICS 2008), Geographical Analysis, Urban Modeling, Spatial Statistics (GEOG-AN-MOD 2008) and Computational Geometry and Applications (CGA 2008).

The contents are presented in two parts. Part 1 is entitled Information Systems and Communications and Part 2 is entitled Geographical Analysis and Geometric Modeling.

Part 1 is devoted to state-of-the-art research utilizing advanced virtual reality paradigms, computational geoinformatics methods, mobile communications, information technologies and data transmission mechanisms.

Part 2 takes an in-depth look at the selected computational science research in the areas of geographical analysis, spatial statistics and geometrical modeling. Each paper provides a detailed experimentation or a case study to amplify the impact of the contribution.

In conclusion, we would like to extend our sincere appreciation to all workshop chairs and authors for submitting their papers to this issue, and to all Associate Editors and referees for their meticulous and valuable reviews. We would also like to express our gratitude to the LNCS editorial staff of Springer, in particular Alfred Hofmann, Ursula Barth and Anna Kramer, who supported us at every stage of the project.

It is our hope that the collection of outstanding papers presented in this issue will be a valuable resource for Transactions on Computational Science readers and will stimulate further research into the vibrant area of computational science.

September 2009

Marina L. Gavrilova
C.J. Kenneth Tan

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