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Marina L. Gavrilova · C. J. Kenneth Tan (Eds.)

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Editors-in-Chief
Marina L. Gavrilova
University of Calgary
Calgary, AB
Canada

C. J. Kenneth Tan
Sardina Systems OÜ
Tallinn
Estonia

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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
- Big Data Analytics
- Bioinformatics
- Biometric Technologies
- Climate and Weather Modeling
- Communication and Data Networks
- Compilers and Operating Systems
- Computer Graphics
- Computational Biology
- Computational Chemistry
- Computational Finance and Econometrics

- Computational Fluid Dynamics
- Computational Geometry
- Computational Number Theory
- Data Representation and Storage
- Data Mining and Data Warehousing
- Information and Online Security
- Grid Computing
- Hardware/Software Co-design
- High-Performance Computing
- Image and Video Processing
- Information Systems
- Information Retrieval
- Modeling and Simulations
- Mobile Computing
- Numerical and Scientific Computing
- Parallel and Distributed Computing
- Robotics and Navigation
- Supercomputing
- System-on-Chip Design and Engineering
- Virtual Reality and Cyberworlds
- Visualization

Editorial

The *Transactions on Computational Science* journal is published as part of the Springer series *Lecture Notes in Computer Science*, and is devoted to a range 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 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 presented techniques.

The current issue is devoted to research on computational geometry and computability, with applications in the Internet of Things, Bioinformatics, and Wireless Body Area Networks. It is comprised of seven papers, three of which were invited following the 18th International Workshop on Computational Geometry and Security Applications, CGSA 2017, held in Trieste, Italy, in June 2017.

The first four papers are devoted to finding computationally efficient solutions to open problems in the fields of Bioinformatics, the Internet of Things (IoT), and Wireless Body Area Networks (WBAN). The first article on IoT defines a world-wide cyber-physical system with a plethora of applications in the fields of demotic, e-health, goods monitoring, and logistics, and presents the use of cross-layer communication schemes. The second article introduces the Wireless Body Area Network (WBAN) as an upcoming research area where wireless sensors are implanted within a human body or attached to the body, with emphasis on making such networks energy efficient and stable. The third paper addresses the critical issue in the rapidly growing field of Bioinformatics of how to regulate and manage the enormous amount of new data to facilitate seamless access to vast biological information, through introducing a new gene classification method in DNA sequences. The fourth paper addresses another classification problem, namely how to perform an automated classification of web blocks through a combination of machine learning and a model-driven feature extraction method.

The remaining three papers are extended versions of the conference papers, invited following CGSA 2017. They present research on sequential and parallelizable computations and discussion of Amdahl's law; introduce a 1-round algorithm for approximate point placement in the plane in an adversarial model; and study the relation of neighborhood graphs as subsets of Delaunay triangulations to locally minimum triangulations.

We thank all of the reviewers for their diligence in making recommendations and evaluating revised versions of the papers presented in this TCS journal issue. We would also like to thank all of the authors for submitting their papers to the journal and the associate editors for their valuable work.

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

June 2018

Marina L. Gavrilova
C. J. Kenneth Tan

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Contents

A Delta-Diagram Based Synthesis for Cross Layer Optimization Modeling of IoT	1
<i>Prathap Siddavaatam and Reza Sedaghat</i>	
Design and Analysis of Energy Efficient Wireless Body Area Network (WBAN) for Health Monitoring	25
<i>Aakriti Khanna, Vaibhav Chaudhary, and Sindhu Hak Gupta</i>	
A Revamp Approach for Training of HMM to Accelerate Classification of 16S rRNA Gene Sequences	40
<i>Prakash Choudhary and M. P. Kurhekar</i>	
BER _{yL} : A System for Web Block Classification	61
<i>Andrey Kravchenko</i>	
The Refutation of Amdahl’s Law and Its Variants	79
<i>F. Dévai</i>	
A Distance Matrix Completion Approach to 1-Round Algorithms for Point Placement in the Plane.	97
<i>Md. Zamilur Rahman, Udayamoorthy Navaneetha Krishnan, Cory Jeane, Asish Mukhopadhyay, and Yash P. Aneja</i>	
Neighbourhood Graphs and Locally Minimal Triangulations.	115
<i>Ivana Kolingerová, Tomáš Vomáčka, Martin Maňák, and Andrej Ferko</i>	
Author Index	129