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# Algorithms and Architectures for Parallel Processing

11th International Conference, ICA3PP 2011  
Melbourne, Australia, October 24-26, 2011  
Proceedings, Part II

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ISSN 0302-9743

e-ISSN 1611-3349

ISBN 978-3-642-24668-5

e-ISBN 978-3-642-24669-2

DOI 10.1007/978-3-642-24669-2

Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2011937820

CR Subject Classification (1998): F.2, H.4, D.2, I.2, G.2, H.3

LNCS Sublibrary: SL 1 – Theoretical Computer Science and General Issues

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*Typesetting:* Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

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# Message from the ADCN 2011 Chairs

We are happy to welcome you to the 2011 International Symposium on Advances of Distributed Computing and Networking (ADCN 2011). ADCN 2011 is held in conjunction with the 11th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2011), Melbourne, Australia, October 24-26, 2011.

ADCN 2011 contains 16 full papers selected from those submitted to the ICA3PP 2011 main track. All the papers were peer reviewed by members of the ICA3PP 2011 Program Committee. The symposium covers a broad range of topics in the field of parallel and distributed computing such as cluster; distributed and parallel operating systems and middleware; cloud, grid, and services computing; reliability and fault-tolerant computing; multi-core programming and software tools; distributed scheduling and load balancing; high-performance scientific computing; parallel algorithms; parallel architectures; parallel and distributed databases; parallel I/O systems and storage systems; parallel programming paradigms; performance of parallel and distributed computing systems resource management and scheduling; tools and environments for parallel and distributed software development; software and hardware; reliability testing, verification and validation; security, privacy, and trusted computing; self-healing, self-protecting and fault-tolerant systems, information security on internet, multimedia in parallel computing parallel computing in bioinformatics dependability issues in computer networks and communications; dependability issues in distributed and parallel systems; dependability issues in embedded parallel systems; industrial applications; and scientific applications.

We thank the authors for submitting their work and the members of the ICA3PP 2011 Program Committee for managing the reviews of the ADCN 2011 symposium papers in such short time. We firmly believe this symposium complements perfectly the topics covered by ICA3PP 2011, and provides additional breadth and depth to the main conference. Finally, we hope you enjoy the symposium and have a fruitful meeting in Melbourne, Australia.

August 2011

Wanlei Zhou  
Alfredo Cuzzocrea  
Michael Hobbs

# Message from the IDCS 2011 Chairs

It is our great pleasure that the accepted papers of the 4<sup>th</sup> International Workshop on Internet and Distributed Computing Systems (IDCS 2011) included in the proceedings of the 11<sup>th</sup> International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2011), held in Melbourne, Australia during October 24–26, 2011.

Following the previous three successful IDCS workshops – IDCS 2008 in Dhaka, Bangladesh; IDCS 2009 on Jeju Island, Korea; and IDCS 2010 in Melbourne, Australia – IDCS 2011 is the fourth in its series to promote research in diverse fields related to Internet and Distributed Computing Systems. In this workshop, we are interested in presenting innovative papers on emerging technologies related to Internet and distributed systems to support the effective design and efficient implementation of high-performance computer networks. The areas of interest for this year’s event are the following:

- Internet architectures and protocols
- modeling and evaluation of internet-based systems
- Internet quality of service
- grid, cloud, and P2P computing
- middleware for wireless sensor networks
- security of network-based systems
- network-based applications (VoIP, streaming)
- network management and traffic engineering
- tools and techniques for network measurements

The target audience of this event includes researchers and industry practitioners interested in different aspects of the Internet and distributed systems, with a particular focus on practical experiences with the design and implementation of related technologies as well as their theoretical perspectives. We received 23 submissions from 7 different countries. Each submission was reviewed by three members of the international Program Committee. After a rigorous review process, we selected 10 papers for inclusion in the workshop program. We plan to invite extended and enhanced versions of top-quality selected papers for submission on a fast-track basis for the Springer Journal of Internet Services and Applications (JISA) and International Journal of Internet and Distributed Computing Systems (IJIDCS). In addition, selected papers in the information security area will be recommended for publication in the International Journal of Risk and Contingency Management.

The organization of IDCS 2011 includes direct or indirect contributions from many individuals, including program chairs, Program Committee members, external reviewers, logistics personnel and student volunteers. We would like to thank Dr Wen Tao Zhu and Dr Muhammad Khurram Khan for accepting the

IDCS 2011 workshop proposal within ICA3PP. Special thanks to ICA3PP general chairs Andrzej Goscinski and Peter Brezany, as well as program chairs Yang Xiang, Alfredo Cuzzocrea, and Michael Hobbs for their continuous support in making IDCS 2011 a success. Last but not least, we express our gratitude to all authors of the accepted and submitted papers. Their contribution has made these proceedings a scholarly compilation of exciting research outcomes.

August 2011

Jemal Abawajy  
Giancarlo Fortino  
Ragib Hasan  
Mustafizur Rahman

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## M2A2 Foreword

It is with great pleasure that we present the proceedings of the Third International Workshop on Multicore and Multithreaded Architectures and Algorithms (M2A2 2011) held in conjunction with the 11th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP 2011) in Melbourne, Australia.

Multicore systems are dominating the processor market, and it is expected that the number of cores will continue to increase in most of the commercial systems, such as high-performance, desktops, or embedded systems. This trend is driven by the need to increase the efficiency of the major system components, that is, the cores, the memory hierarchy, and the interconnection network. For this purpose, the system designer must trade off performance versus power consumption, which is a major concern in current microprocessors. Therefore new architectures or architectural mechanisms addressing this trade-off are required. In this context, load balancing and scheduling can help to improve energy saving. In addition, it remains a challenge to identify and productively program applications for these architectures with a resulting substantial performance improvement.

The M2A2 2011 workshop provided a forum for engineers and scientists to address the resulting challenge and to present new ideas, applications, and experience on all aspects of multicore and multithreaded systems.

This year, and because of the high quality of the submitted papers, only about 38% of the papers were accepted for the workshop.

We would like to express our most sincere appreciation to everyone contributing to the success of this workshop. First, we thank the authors of the submitted papers for their efforts in their research work. Then, we thank the TPC members and the reviewers for their invaluable and constructive comments. Finally, we thank our sponsors for their support of this workshop.

August 2011

Houcine Hassan  
Julio Sahuquillo

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## HardBio 2011 Foreword

It gives us great pleasure to introduce this small collection of papers that were presented at the First International Workshop on Parallel Architectures for Bioinformatics Systems (HardBio 2011), October 23–26, 2011, Melbourne, Australia.

Bioinformatics is a research field that focuses on algorithms and statistical techniques that allow efficient interpretation, classification and understanding of biological datasets. These applications are to the general benefit of mankind. The datasets typically consist of huge numbers of DNA, RNA, or protein sequences. Sequence alignment is used to assemble the datasets for analysis. Comparisons of homologous sequences, gene finding, and prediction of gene expression are the most common techniques used on assembled datasets. However, analysis of such datasets have many applications throughout all fields of biology. The down-side of bioinformatics-related applications is that they need a humongous computational effort to be executed. Therefore, a lot of research effort is being channeled towards the development of special-purpose hardware accelerators and dedicated parallel processors that allow for efficient execution of this kind of applications

The Program Committee received 12 submissions, from which it selected 4 for presentation and publication. Each paper was evaluated by three referees. Technical quality, originality, relevance, and clarity were the primary criteria for selection. We wish to thank all these who submitted manuscripts for consideration. We also wish to thank the members of the Program Committee who reviewed all of the submissions.

I hope that many more reserachers will submit the results of their work to next year's workwhop.

August 2011

Nadia Nedjah  
Luiza de Macedo Mourelle

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