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Euro-Par 2008 Workshops – Parallel Processing

Springer

Volume Editors

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Preface

Parallel and distributed processing, although within the focus of computer science research for a long time, is gaining more and more importance in a wide spectrum of applications. These proceedings aim to demonstrate the use of parallel and distributed processing concepts in different application fields, and attempt to spark interest in novel research directions to parallel and high-performance computing research in general.

The objective of these workshops is to specifically address researchers coming from university, industry and governmental research organizations and application-oriented companies in order to close the gap between purely scientific research and the applicability of the research ideas to real-life problems.

Euro-Par is an annual series of international conferences dedicated to the promotion and advancement of all aspects of parallel and distributed computing.

The 2008 event was the 14th issue of the conference. Euro-Par has for a long time been eager to attract colocated events sharing the same goal of promoting the development of parallel and distributed computing, both as an industrial technique and an academic discipline, extending the frontier of both the state of the art and the state of the practice. Since 2006, Euro-Par has been offering researchers the chance to colocate advanced technical workshops back-to-back with the main conference. This is for a mutual benefit: the workshops can take advantage of all technical and social facilities that are set up for the conference, so that the organizational tasks are kept to a minimal level; the conference can rely on workshops to experiment with specific areas of research that are not yet mature enough, or too specific, to lead to an official, full-fledged topic at the conference.

The 2006 and 2007 events were quite successful, and were extended to a larger size in 2008, where nine events were colocated with the main Euro-Par Conference:

- **CoreGRID Symposium** is the major annual event of the CoreGRID European Research Network on Foundations, Software Infrastructures and Applications for large-scale distributed, grid and peer-to-peer technologies. It is also an opportunity for a number of CoreGRID Working Groups to organize their regular meetings. The proceedings have been published in a specific volume of the Springer CoreGRID series, *Towards Next Generation Grids.*
- **GECON 2008** is the 5th International Workshop on Grid Economic and Business Model. Euro-Par was eager to attract an event about this very important aspect of grid computing, which has often been overlooked by scientific researchers of the field. Its proceedings are published in a separate volume of Springer's *Lecture Notes in Computer Science* series.
- **VHPC 2008** is the Workshop on Virtualization/Xen in High-Performance Cluster and Grid Computing. Virtual machine monitors (VMMs) are now

integrated with a variety of operating systems and are moving out of research labs into scientific, educational and operational usage. This workshop aimed to bring together researchers and practitioners active in exploring the application of virtualization in distributed and high-performance cluster and grid computing environments. This was a unique opportunity for the Euro-Par community to make connections with this very active research domain.

- **UNICORE Summit 2008** brought together researchers and practitioners working with UNICORE in the areas of grid and distributed computing, to exchange and share their experiences, new ideas and latest research results on all aspects of UNICORE. The UNICORE grid technology provides a seamless, secure and intuitive access to distributed grid resources.

  This was the fourth meeting of the UNICORE community, after a meeting in Sophia-Antipolis, France, in 2005, and a colocated meeting at Euro-Par 2006 in Dresden, Germany, in 2006, and Euro-Par 2007 in Rennes, France.

- **HPPC 2008** is the Second Workshop on Highly Parallel Processing on a Chip. With a number of both general and special purpose multi-core processors already on the market, it is foreseeable that new designs with a substantial number of processing cores will emerge to meet demands for extremely high performance, dependability and controllable power consumption in mobile and embedded devices, and in response to the convergence of communication, media and compute devices. The HPPC workshop aims to be(come) a forum for discussion of the major challenges to architecture, language and compiler design, algorithms and application developments, in order to fully (or acceptably) exploit the raw compute power of multi-core processors with a significant amount of parallelism.

- **SGS 2008** is the First Workshop on Secure, Trusted, Manageable and Controllable Grid Services. It refers to the notions of security, the way we manage such large systems and the way we control the grid system. For instance, the word 'controllable' means: how we measure the activity of the grid and how we report it. The word 'manageable' means: 'how we deploy the grid architecture, the grid softwares, and how we start jobs (under controllable events such as the availability of resources). The word 'security' refers to the traditional fields of authentication, fault tolerance but refers also to safe execution (how to certify results, how to adapt computation according to some metric). Moreover, all these services should collaborate making the building of middleware a challenging problem. The building of chains of trust between software components as well as the integration of security and privacy mechanisms across multiple autonomous and/or heterogeneous grid platforms are key challenges for the community.

- **The PROPER 2008** workshop was organized on behalf of the Virtual Institute for High Productivity Supercomputing (VI-HPS), which aims at improving the quality and accelerating the development process of complex simulation codes in science and engineering that are being designed to run on highly parallel computer systems. One part of this mission is the development of integrated state-of-the-art programming tools for high-performance computing that assist

programmers in diagnosing programming errors and optimizing the performance of their applications.

Accordingly, the workshop topics cover tools for parallel program development and analysis as well as general performance measurement and evaluation approaches. Last but not least, it includes success stories about optimization or parallel scalability achieved using the tools. In particular, the workshop wants to stimulate discussion between tool developers and experts on one hand and tool users and application developers on the other hand. Furthermore, it especially supports younger researchers to present their work.

- **ROIA 2008** is the First International Workshop on Real-Time Online Interactive Applications on the Grid. It aimed to bring together researchers from the domain of ROIAs and grid computing in order to exchange knowledge, experiences, ideas and concepts for combining both fields. The event was closely related to the research perfomed in the European edutain@grid project.
- **DPA 2008** aimed to determine where programming abstractions are important and where non-programmatic abstractions are likely to make greater impact in enabling applications to effectively utilize distributed infrastructure. This workshop will have a balance of applications and topical infrastructure developments (such as abstractions for Clouds).

The reader will find in this volume the proceedings of the last seven events.

Hosting Euro-Par 2008 and these colocated events in Las Palmas de Gran Canaria would not have been possible without the support and the help of different institutions and numerous people.

Although we are thankful to many more people, we are particularly grateful to the workshop organizers: Martti Forsell and Jesper Larsson Träff for HPPC 2008; Achim Streit and Wolfgang Ziegler for UNICORE Summit 2008; and Michael Alexander and Stephen Childs for VHPC 2008. It has been a pleasure to collaborate with them on this project.

We particularly thank them for their interest in our proposal and their trust and availability along the entire preparation process.

Euro-Par 2008 was hosted on the university campus and we would like to thank the University Institute for Intelligent Systems and Numerical Applications in Engineering of the Universidad de Las Palmas de Gran Canaria for the support and infrastructure. We gratefully acknowledge the great organizational support of the Computer Architecture and Operating Systems Department of the Universidad Autónoma de Barcelona. We would also like to thank the Cabildo de Gran Canaria and the City Council of Las Palmas de Gran Canaria for they institutional support.

Finally, we are grateful to Springer for agreeing to publish the proceedings of these seven workshops in a specific volume of its *Lecture Notes in Computer Science* series. We are definitely eager to pursue this collaboration.

It has been a great pleasure to work together on this project in Las Palmas de Gran Canaria.

We hope that the current proceedings are beneficial for the sustainable growth and awareness of parallel and distributed computing concepts in future applications.

December 2008
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