

LNCS 4297

Yves Robert
Manish Parashar
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Viktor K. Prasanna (Eds.)

High Performance Computing – HiPC 2006

13th International Conference
Bangalore, India, December 2006
Proceedings



Springer

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Springer

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Library of Congress Control Number: 2006938017

CR Subject Classification (1998): D.1-4, C.1-4, F.1.2, G.1-2

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

ISSN 0302-9743

ISBN-10 3-540-68039-X Springer Berlin Heidelberg New York

ISBN-13 978-3-540-68039-0 Springer Berlin Heidelberg New York

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Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11945918 06/3142 5 4 3 2 1 0

Commenced Publication in 1973

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Message from the Program Chair

Welcome to the proceedings of the 13th International Conference on High-Performance Computing!

This year, we were delighted to receive 335 submissions from 5 continents and 39 different countries. Eventually, 52 submissions from 19 different countries were selected for presentation at the conference and publication in the conference proceedings.

This large number of submissions led us to use the same two-phase selection process as for HiPC 2005. First, all submitted papers were carefully considered by the Program Chair and Vice-Chairs to check their consistency with the minimal requirements for acceptance. At the end of this first stage, we were left with 282 submissions, which were further considered by the Program Committee. Each of these papers was reviewed by three Program Committee members. As many as 837 reviews were collected (2.97 per paper on the average), and each paper was discussed at the on-line Program Committee meeting. Finally, 52 out of 282 papers (18.4%) were accepted for presentation and publication in the proceedings.

These figures show that the selection process was highly competitive. We congratulate all authors of accepted papers for their success. Also, we would like to thank all authors of submitted papers for their interest in the conference, and we strongly encourage them to submit their work to forthcoming issues of HiPC.

Two outstanding papers were selected as “Best Papers”; one in the *Algorithms and Applications* area (“Algorithmic Ramifications of Prefetching in Memory Hierarchy,” by Akshat Verma and Sandeep Sen), and the other in the *Software* area (“A Cache-Partitioning Aware Replacement Policy for Chip Multiprocessors,” by Haakon Dybdahl, Per Stenstrom, and Lasse Natvig). They were presented in a separate plenary session and each paper was awarded a prize sponsored by InfoSys.

In the conference program, we were pleased to accommodate ten parallel technical sessions of high-quality contributed papers, plus the special plenary “Best Papers” session. In addition, this year’s conference also featured three Tutorials, six Keynote Addresses, a Panel Session, a Poster Session, Industrial Exhibits, six Workshops and a Mini-Symposium.

It was a pleasure putting together this program with the help of six excellent Program Vice-Chairs and their 89 Program Committee members. The hard work of all the Program Committee members is deeply appreciated. I especially wish to acknowledge the dedicated effort put forth by the Vice-Chairs: Srinivas Aluru (Algorithms), John Morrison (Applications), Bradley Kuszmaul (Architecture), Yuanyuan Yang (Communication Networks), Stéphane Ubéda (Mobile and Sensor Computing), and Sanjay Rajopadhye (Systems Software).

Without their help and timely work, the quality of this program would not be as high, nor would the process have run so smoothly.

I thank the other organizers who contributed in assembling this program, including those who organized the keynotes, tutorials, workshops, awards, poster session, industry

exhibits, and those who performed the administrative functions that were essential to the success of this conference. The work of Sushil K. Prasad in putting together the conference proceedings is also acknowledged, as well as the support provided by the Cyber Co-chairs, Sumir Chandra and Vijay Bhat.

I express heart-felt thanks to our General Co-chairs, Manish Parashar and Ramamurthy Badrinath; Steering Chair, Viktor Prasanna; and to the Vice-General Co-chairs, Rajendra V. Boppana and Rajeev Muralidhar; for all their useful advice. Lastly, I thank the Steering Chair and General Co-chairs for allowing me to serve our community as the Program Chair of this high-quality international conference. It has been a rewarding experience, and a pleasure to correspond with so many of you.

December 2006

Yves Robert
Ecole Normale Supérieure de Lyon, France

Message from the General Co-chairs and the Vice General Co-chairs

On behalf of the organizers of the 13th International Conference on High-Performance Computing (HiPC), it is our pleasure to welcome you to Bangalore. I do hope you will find these proceedings exciting and rewarding.

Several new events made HiPC 2006 a special and exciting meeting. The call for papers included, for the first time, a separate track on Mobile and Sensor Computing. HiPC 2006 also featured a mini-symposium on High-Performance Computing Technologies, Applications and Experience aimed at bringing together the users and providers of HPC. Finally the HiPC Student Challenge brought together student teams from Indian institutions in a competition to design and develop distributed solutions to respond to and effectively manage national emergencies. These new events were complemented by the keynotes presented by internationally renowned research, the posters session presenting hot off-the-press research results, and the industry and research exhibits. As always, the meeting was preceded by a set of tutorials and was followed by workshops highlighting new and emerging aspects of the field.

The HiPC call for papers, once again, received an overwhelming response, attracting 335 submissions from 39 countries and establishing another record. For this, we would like to specially thank Yves Robert, Program Chair, who with remarkable dedication put together an outstanding technical program consisting of the 52 papers that appear in these proceedings. We would also like to thank the Program Committee for their efforts in assembling such an excellent program and the authors who submitted the high-quality material from which that program was selected. Finally, we would like to thank the presenters of the keynotes, posters and tutorials, the organizers of the workshops, and all the participants.

Arranging an exciting meeting with a high-quality technical program is easy when one is working with an excellent and dedicated team and can build on the practices and levels of excellence established by a quality research community. HiPC 2006 would not have been possible without the tremendous efforts of the many volunteers. We would like to acknowledge the critical contributions of each one. We would especially like to thank Viktor Prasanna, Chair of the HiPC Steering Committee, for his leadership, sage guidance, and untiring dedication. We would also like to welcome our new volunteers to the team - your efforts are critical to the continued success of this conference. Finally, we would like to gratefully acknowledge our academic and industry sponsors including the IEEE Computer Society, ACM SIGARCH, EATCS, IFIP, NASSCOM, MAIT, Infosys, DELL, HP, IBM, Microsoft, Satyam, Sun, Intel, AMD and Cray.

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Message from the Steering Chair

It is my pleasure to welcome you to the proceeding of the 13th International Conference on High-Performance Computing held in Bangalore, the IT capital of India.

This conference would not be possible without the dedicated effort of many volunteers over the past year. First, I would like to single out the contributions of Yves Robert, Program Chair, for his outstanding contributions in putting together an excellent technical program. I appreciate his efforts in handling a large number of submissions in a timely manner and his overall coordination to ensure a quality program. Ramamurthy Badrinath and Manish Parashar as General Co-chairs provided the leadership in resolving numerous meeting-related issues and putting together the overall meeting program including the workshops and tutorials. They were ably assisted by Rajendra Boppana and Rajeev Muralidhar, Vice General Co-chairs. The poster/presentation session was organized by Rajeev Thakur. The meeting offers scholarships for India-based students. These scholarships were administered by Anu Bourgeois and Madhusudhan Govindaraju.

We have several continuing as well as new workshops. These workshops were coordinated by Manimaran Govindarasu. Rama Govindaraju put together the tutorials. His efforts in securing additional funding for tutorial speakers is appreciated. The Web site was maintained by Viraj Bhat and Sumir Chandra. The local arrangements were handled by C. Kalyana Krishna. Sushil Prasad liaised with the authors and Springer to bring out the proceedings. Rajeev Raje, Bo Hong, and Manisha Dhanke handled the publicity for us. Susamma Barua acted as the Registration Chair.

Ramamurthy Badrinath with assistance from Raghuram Tupuri of AMD put together the Mini-Symposium on High-Performance Computing Technologies, Applications and Experience. It expands our HPC Users meeting that was organized in 2005. The intent of the mini-symposium is to provide a forum for vendors as well as HPC users in India to present the technologies and user experiences. In addition, Vijay Mann and Raghuram Tupuri coordinated the industry exhibits.

I would like to thank all our volunteers for their tireless efforts. The meeting would not be possible without the enthusiastic commitment of these individuals.

Major financial support for the meeting was provided by several leading IT companies and multinationals operating in India. I would like to acknowledge the following individuals and their organizations for their support:

N. R. Narayana Murthy and Kris Gopalakrishnan, Infosys
Harish Grama, IBM India
P. Gopalakrishnan, IBM India Research Lab
Daniel Dias, IBM India Research Lab
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Vittal Kini and Kiran Panesar, Intel Research, India
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Finally, I would like to thank Animesh Pathak at USC for his continued assistance and enthusiasm in organizing the meeting.

December 2006

Viktor K. Prasanna
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