Bernd Mohr
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# Recent Advances in Parallel Virtual Machine and Message Passing Interface

13th European PVM/MPI User's Group Meeting
Bonn, Germany, September 2006
Proceedings

Springer

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# Preface

Since its inception in 1994 as a European PVM user's group meeting, EuroPVM/MPI has evolved into the foremost international conference dedicated to the latest developments concerning MPI (Message Passing Interface) and PVM (Parallel Virtual Machine). These include fundamental aspects of these message passing standards, implementation, new algorithms and techniques, performance and benchmarking, support tools, and applications using message passing. Despite its focus, EuroPVM/MPI is accommodating to new message-passing and other parallel and distributed programming paradigms beyond MPI and PVM. Over the years the meeting has successfully brought together developers, researchers and users from both academia and industry. EuroPVM/MPI has contributed to furthering the understanding of message passing programming in these paradigms, and has positively influenced the quality of many implementations of both MPI and PVM through exchange of ideas and friendly competition.

EuroPVM/MPI takes place each year at a different European location, and the 2006 meeting was the 13th in the series. Previous meetings were held in Sorrento (2005), Budapest (2004), Venice (2003), Linz (2002), Santorini (2001), Balatonfüred (2000), Barcelona (1999), Liverpool (1998), Cracow (1997), Munich (1996), Lyon (1995), and Rome (1994). EuroPVM/MPI 2006 took place in Bonn, Germany, 17 – 20 September, 2006, and was organized jointly by the C&C Research Labs, NEC Europe Ltd., and the Research Center Jülich.

Contributions to EuroPVM/MPI 2006 were submitted in May as either full papers or posters, or (with a later deadline) as full papers to the special session ParSim on "Current Trends in Numerical Simulation for Parallel Engineering Environments" (see page 356). Out of the 75 submitted full papers, 38 were selected for presentation at the conference. Of the 9 submitted poster abstracts, 6 were chosen for the poster session. The ParSim session received 11 submissions, of which 5 were selected for this special session. The task of reviewing was carried out smoothly within very strict time limits by a large program committee and a number of external referees, counting members from most of the American and European groups involved in MPI and PVM development, as well as from significant user communities. Almost all papers received 4 reviews, some even 5, and none fewer than 3, which provided a solid basis for the program chairs to make the final selection for the conference program. The result was a well-balanced and focused program of high quality. All authors are thanked for their contribution to the conference. Out of the accepted 38 papers, 3 were selected as *outstanding contributions* to EuroPVM/MPI 2006, and were presented in a special, plenary session:

- "Issues in Developing a Thread-Safe MPI Implementation" by William Gropp and Rajeev Thakur (page 12)
- "Scalable Parallel Suffix Array Construction" by Fabian Kulla and Peter Sanders (page 22)

- "Formal Verification of Programs That Use MPI One-Sided Communication" by Salman Pervez, Ganesh Gopalakrishnan, Robert M. Kirby, Rajeev Thakur and William Gropp (page 30)

"Late and breaking results", which were submitted in August as brief abstracts and therefore not included in these proceedings, were presented in the eponymous session. Like the "Outstanding Papers" session, this was a premiere at EuroPVM/MPI 2006.

Complementing the emphasis in the call for papers on new message-passing paradigms and programming models, the invited talks by Richard Graham, William Gropp and Al Geist addressed possible shortcomings of MPI for emerging, large-scale systems, covering issues on fault-tolerance and heterogeneity, productivity and scalability, while the invited talk of Katherine Yelick dealt with advantages of higher-level, partitioned global address space languages. The invited talk of Vaidy Sunderam discussed challenges to message-passing programming in dynamic metacomputing environments. Finally, with the invited talk of Ryutaro Himeno, the audience gained insight into the role and design of the projected Japanese peta-scale supercomputer.

An important part of EuroPVM/MPI is the technically oriented vendor session. At EuroPVM/MPI 2006 eight significant vendors of hard- and software for high-performance computing (Etnus, IBM, Intel, NEC, Dolphin Interconnect Solutions, Hewlett-Packard, Microsoft, and Sun), presented their latest products and developments.

Prior to the conference proper, four tutorials on various aspects of message passing programming ("Using MPI-2: A Problem-Based Approach", "Performance Tools for Parallel Programming", "High-Performance Parallel I/O", and "Hybrid MPI and OpenMP Parallel Programming") were given by experts in the respective fields.

Information about the conference can be found at the conference Web-site `http://www.pvmmpi06.org`, which will be kept available.

The proceedings were edited by Bernd Mohr, Jesper Larsson Träff and Joachim Worringen. The EuroPVM/MPI 2006 logo was designed by Bernd Mohr and Joachim Worringen.

The program and general chairs would like to thank all who contributed to making EuroPVM/MPI 2006 a fruitful and stimulating meeting, be they technical paper or poster authors, program committee members, external referees, participants, or sponsors.

September 2006


Bernd Mohr
Jesper Larsson Träff
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For the ParSim session the following external referees provided reviews.

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The conference would have been substantially more expensive and much less pleasant to organize without the generous support of a good many industrial sponsors. Platinum and Gold level sponsors also gave talks at the vendor session on their latest products in parallel systems and message passing software. EuroPVM/MPI 2006 gratefully acknowledges the contributions of the sponsors to a successful conference.

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# Table of Contents

## Invited Talks



## Tutorials



## Outstanding Papers

## Collective Communication



## Communication Protocols



## Debugging and Verification

## Fault Tolerance



## Metacomputing and Grid

## Parallel I/O



## Implementation Issues



## Object-Oriented Message Passing



## Limitations and Extensions

## Performance



## ParSim