
Editorial

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Biographical notes: R.R. dos Santos received his BS in Computer Science from PUCRS Brazil in 1994 and his MS and PhD degrees both from Federal University of Rio Grande do Sul, Brazil in 1997 and 2003, respectively. From 1999 to 2001 he was a Postgraduate Researcher at University of California, Santa Cruz and from 2001 to 2004 he was a Hardware Designer at the Processor and Network Products at Sun Microsystems Inc., Sunnyvale California. In 2004 he joined the University of Santa Cruz, Santa Cruz do Sul Brazil as an Adjunct Professor where he was the Computer Engineering Department Chair. Since 2008 he is with National Center for Advanced Electronic Technology - CEITEC S.A. in Porto Alegre, Brazil. His research interests include high performance microprocessor architecture, reconfigurable computing, logic design and functional verification.

H. Mongelli received his degree in Mathematics from UFMS Brazil in 1989 and his MS and PhD degrees both from University of So Paulo-Brazil in 1995 and 2000, respectively. Since 1991 he has been Professor at Federal University of Mato Grosso do Sul, Brazil. His research interests include high performance computing, parallel and distributed algorithms and theory of computing.

We are delighted to welcome you to this edition of the *International Journal on High Performance Systems Architectures*. This is a Special Issue on Parallel and Distributed Systems, Applications and Architectures which comprises a set of six papers carefully selected from the WSCAD-SSC 2008 conference held in Brazil. From a total of 85 full papers submitted to the conference, the program committee members and invited reviewers selected 28 which were then presented at the conference. From these, the audience and the session chairs selected the nine best papers. The authors submitted a full version of their work to this Special Issue and then all the papers went again through a new review process.

As a result, this special issue brings the following contributions which are summarised below:

- ‘A pattern based instruction encoding technique for high performance architectures’, presents a proposal to reduce the program footprint and the instruction fetch latency in high performance architectures.
- ‘Online mapping of MPI-2 dynamic tasks to processes and threads’, introduces a library for MPI called libSpawn that implements a scheme to map tasks between processes and threads to minimise communication and tasks creation costs.
- ‘An evaluation of the performance impact of generic group communication APIs’, evaluates the performance impact of Hedera and jGCS over three well-known group communication systems. Furthermore the authors discuss the circumstances where it would be worth to implement the investigated systems as opposed to the other three.
- ‘An architecture for DICOM medical images storage and retrieval adopting distributed file systems’, proposes an architecture that targets high performance levels to store and retrieve DICOM medical images using a distributed approach. The results shown improvements in the order of 16% in terms of storage process in comparison to a conventional database system.
- ‘FPGA implementation and performance evaluation of an RFC 2544 compliant Ethernet test set’, presents the design, verification and performance validation of an Ethernet tester which complies with the 2544 RFC.

The system was implemented using a commercial of-the-shelf FPGA board and demonstrated that the reduction of unnecessary overhead introduced by the commonly used software layers allowed higher throughput as compared to conventional software based solutions.

- ‘Applying reinforcement learning to scheduling strategies in an actual grid environment’, presents the analysis of the reinforcement learning approach applied towards the classification of available resources in an actual grid environment.

The guest editors would like to thank all the program committee members, session chairs and the audience of WSCAD-SSC 2008 for their amazing work. We also would like to thank Dr. Nadia Nadjah (*IJHPSA* Editor-in-Chief), Dr. Felipe Franca for the opportunity and the Editorial Board members, as well as the journal reviewers, for their work and contribution in reviewing the final papers in order to enable this first special issue with papers from WSCAD-SSC.