1. Preface to the 7th International Workshop on High-Level Parallel Programming Models and Supportive Environments (HIPS’02)

High-level programming environments are the key to success of the next generation of software systems. The quest for “the next language” that provides an application programming interface much higher than ordinary Fortran, C, C++, and Java, has been enticing researchers more than two decades. If this is a hard problem for ordinary, sequential computers, it may be the challenge that makes or breaks parallel computing.

HIPS’02 focused on high-level programming issues of parallel architectures, ranging from SMPs and DSM systems to workstation clusters to massively-parallel grids. Its goal was to bring together researchers working in the areas of applications, computational models, language design, compilers, system architecture, and programming tools to discuss new ideas and developments. In particular, the HIPS’02 Call for Papers encouraged contributions describing experiences with established programming systems, such as PVM, MPI, HPF, OpenMP, distributed objects, extensions of these systems, discussion of significant shortcomings in today’s environments, tools and methodologies that support these systems in new, more effective ways, new programming paradigms and principles, compilers, runtime libraries, and operating systems in support of programming environments, as well as architectural support for high-level programming systems.

The workshop program includes 11 of 16 submitted papers. Submitted papers were strictly reviewed by the program committee members and selected based on their scientific quality. Authors of accepted papers were asked to prepare final papers for the workshop CDROM according to the reviewers’ comments and suggestions. The committee serving HIPS’02 include the following members.

2 HIPS’02 Committees

Workshop Chair: Rudolf Eigenmann, Purdue University, USA

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- Martin Schulz, Technische Universität München, Germany
- Xian-He Sun, Illinois Institute of Technology, USA
- Domenico Talia, ISI-CNR, Italy
- Michael Voss, University of Toronto, Canada
3 Workshop Papers

Session 1: Best Paper Presentation

Generating Parallel Programs from the Wavefront Design Pattern, John Anvik, Steve MacDonald, Duane Szafron, Jonathan Schaeffer, Steven Bromling and Kai Tan.

Session 2: High-level Extensions to C, C++

On implementing the NAS benchmark MG in SAC, Clemens Grelck.

A C++ Implementation of the Co-Array Programming Model for Blue Gene/L, Maria Eleftheriou, Siddhartha Chatterjee and Jose E. Moreira.

Session 3: Domain-specific Languages and Implementations, Transformations, Libraries

Treating a User-Defined Parallel Library as a Domain-Specific Language, Daniel J. Quinlan, Brian Miller, Bobby Philip and Markus Schordan.


A Performance Optimization Framework for Compilation of Tensor Contraction Expressions into Parallel Programs, Gerald Baumgartner, David E. Bernholdt, Daniel Cociorva, Robert Harrison, Marcel Nooijen, J. Ramanujam and P. Sadayappan.

Session 4: Managing Memory, Locality, Degree of Parallelism

Implementing OpenMP using Dataflow Execution Model for Data Locality and Efficient Parallel Execution, Tienhsiung Weng and Barbara Chapman.

Heaps and Stacks in Distributed Shared Memory, M. Pizka and C. Rehn.


Session 5: Tools


Scalable Parallel Program Debugging with Process Isolation and Grouping, Dieter Kranzmüller.