Topic 10 Parallel Programming: Models, Methods and Programming Languages

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Welcome to Euro-Par's Topic 10, which provides a forum for the presentation of the latest research results and practical experience in parallel programming. Topic 10 emphasises results which improve the process of developing highperformance programs. The general challenge is to target available hardware structures, while maintaining useful application structure. Of particular interest are novel techniques by which parallel software can be assembled from reusable parallel components – without compromising efficiency.

We thank the many helpful referees, who provided at least four reports on each of the 29 papers submitted. Nine of the papers submitted to Topic 10 were accepted. In addition, one paper, by Aldinucci et al, was transferred from Topic 19 (Demo Session). This year's submissions represent interesting new developments and concerns in the Parallel Programming research community:

MPI and OpenMP: Our distinguished paper, by Jarmo Rantakokko, on programming models for structured adaptive mesh refinement, concerns an extremely important and complex class of parallel numerical applications and studies OpenMP and MPI on a hardware platform which supports hybrid implementations. Very similar issues are explored by Fürlinger, Schenk and Hagemann who study OpenMP/MPI hybrid approaches to task-queue parallelism in their sparse linear solver.

Novel Languages: Meanwhile, novel languages are also represented. Rasmussen et al, present a short paper on the co-Array model in Python. Rocha, Silva and Santos Costa present an interesting study of lock alternatives in memoized logic programming. Ashby, Kennedy and O'Boyle present work on a powerful mixed functional-imperative language, showing the potential for optimization across language abstractions. An elegant approach to this important problem is offered by Kakehi et al.

Middleware and Operating Systems: Middleware issues form the third major theme. Ribes, Pérez and Priol discuss how to handle exceptions in parallel CORBA components. Magini et al of the ASSIST group at the University of Pisa contribute with interesting work on parallel composition in their CORBA-based system. Aldinucci et expand on the ASSIST architecture and discuss applications. Extending the envelope somewhat, Frachtenburg and colleagues from Los Alamos explore parallel programming models in scalable operating systems.

This year we rejected 20 papers, among them very promising work - we have worked hard to soften the blow through extensive and constructive refereeing we hope to see the fruits of your work in 2005!