

# Topic 03

## Scheduling and Load Balancing

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Welcome to the Euro-Par 2001 Topic 03 on Scheduling and Load Balancing. Scheduling and load balancing are key areas in the quest for performance in parallel and distributed applications. Relevant techniques can be provided either at the application level, or at the system level, and both scenarios are of interest for this topic.

Twenty papers were submitted to Topic 03, one of which was re-directed to Topic 04. Out of the nineteen remaining papers, three were selected as regular papers, and four as research notes. All papers were reviewed by at least three referees, and the vast majority received four reviews.

The presentation of the seven papers is organized in two sessions. The first session contains three papers. In the first paper, *On Minimising the Processor Requirements of LogP Schedules*, the authors propose different clustering heuristics for task scheduling in the LogP model. These heuristics reduce the number of required processors without degrading the makespan. The second paper, *Exploiting Unused Time Slots in List Scheduling Considering Communication Contention*, presents (two versions of) a contention aware scheduling strategy which is compared to two related methods. It out-performs these other methods, with similar or better complexity, apart from one case where high communication costs mean that a more sequential solution is most apt. The third paper, *An Evaluation of Partitioners for Parallel SAMR Applications*, presents a review of mesh-partitioning tools/techniques for structured meshes, and provides experimental results for the various tools on one selected application, with various numbers of processors, problem size and partition granularity.

The second session contains four papers. The first paper, *Load Balancing on Networks with Dynamically Changing Topology*, presents a load balancing algorithm targeted at synchronous networks with dynamic topologies (e.g. due to link failures), and establishes a convergence result for nearest-neighbor load-balancing techniques. The second paper, *A Fuzzy Load Balancing Service for Network Computing Based on Jini*, addresses the problem of load balancing for servers executing independent tasks generated by clients in a distributed object computing environment implemented with Jini; the results show that the fuzzy algorithm achieves significantly better load balancing than random and round-robin algorithms. The third paper, *Approximation Algorithms for Scheduling Independent Malleable Tasks*, builds on the well-known continuous resource allocation case for scheduling independent non-preemptive tasks. Finally, the fourth paper, *The Way to Produce the Quasi-workload in a Cluster*, addresses the problem of generating synthetic workloads that can serve as input for the simulation of scheduling algorithms in cluster-based architectures.

We wish you an interesting workshop via the presentations, papers, and interactions with fellow researchers. We also hope you have an enjoyable visit to Manchester.