Topic 13
Theory and Algorithms for Parallel Computation

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As theory of modelling and algorithms form the basis for parallel computing, the theory workshop is still a key part of Europar despite of the diversity of the topics of the conference. This year, the submissions mainly concentrate on algorithms to improve communication issues. Only a few contributions to other topics made it.

In more detail, Schmollinger presents a new algorithm for parallel radix sort emphasizing on the communication especially for unbalanced data and demonstrates considerable improvement compared to the traditional approach.

In a new paper on parallel list ranking, Sibeyn considers diverse algorithms under the aspect of global communication, and presents a new strategy and analysis when local communication is prefered.

The third paper by Laforest considers an interesting network design problem where a certain kind of graph spanner has to be constructed, and gives non-approximability results as well as efficient algorithms for trees.

Cordasi, Negro, Rosenberg and Scarano addresses the mapping problem of data structures to parallel memory modules in the paper "c-Perfect Hashing Schemes for Binary Trees, with Applications to Parallel Memories".

A non-optimal but simple and elegant algorithm for parallel multiplication of large integers has been developed by Bunimov and Schimmler. Their parameter and analysis techniques are adapted from VLSI theory.

The paper "A Model of Pipelined Mutual Exclusion on Cache-Coherent Multiprocessors" by Takesue has a more practice-oriented topic. A new model of pipelined mutual exclusion is proposed and evaluated by diverse simulations.

Summarizing, we found the collection of papers satisfying and diverse enough to enlight several theoretical aspects of parallel computation. Finally, we wish to thank all the authors and the referees for their efforts.