

Topic 12

Theory and Algorithms for Parallel Computation

Andrea Pietracaprina, Kieran Herley,
Christos Zaroliagis, and Casiano Rodriguez-Leon

Topic Chairs

The study of theoretical aspects related to the design, analysis and experimentation of efficient algorithms, and to the identification of effective models of computation, represents a fundamental research area in parallel computing, which has been alive and productive for over two decades and well represented in the Euro-Par community. A distinctive characteristic of this Topic 12 is the variety of contributions addressing classical problems as well as the new challenges posed by recent technological advances and emerging computing paradigms.

This year 13 papers were submitted to the topic, investigating a variety of algorithmic and modeling problems for parallel computation and communication. Among all submissions, 4 papers were accepted as full papers for the conference, resulting in a 31% acceptance rate.

Accepted papers contain the following contributions: new centralized and distributed algorithms for bufferless routing in leveled networks, which attain optimal performance within logarithmic factors; results concerning the existence and the design of truthful mechanisms for the computation of shortest path trees in communication networks where edges are owned by selfish agents, under both utilitarian and non-utilitarian scenarios; embeddings of the hypercube in the partitioned optical passive starts network consisting of g groups of d processors each, which are optimal for all values of g and d ; on-line algorithms to serve sequences of adversarial access requests to a shared memory page issued by n processors moving in a certain metric space, which attain good competitive ratios with respect to communication costs.