Short Presentations 2: Applications

Session Chair: A. Pawlak

This session “Applications” comprises wide range of interesting applications of parallel processing from simulated annealing to neural networks.

In the first paper of this session entitled “Parallel simulated annealing for the delivery problem” Zbigniew Czech of Silesian University of Technology demonstrates how the delivery problem could be reduced to an NP-complete set-partitioning problem. He investigates two algorithms of parallel simulated annealing, i.e. the simultaneous independent searches and the simultaneous periodically interacting searches.

The following paper by Berenbrink, A. Brinkmann, and C. Scheideler presents “SimLab — A simulation environment for storage area networks”. SimLab has been implemented at the Departments of Electrical Engineering and Computer Science of the Paderborn University to aid the development and verification of distributed algorithms for a storage network that can support the real-time delivery of data. It can also be used for the simulation of many other types of networking problems.

S. Wong, S. Cotofana, and S. Vassiliadis present “Coarse reconfigurable multimedia unit extension”. The reconfiguration introduced is intended to provide fast reconfiguration times and retain high flexibility. The performance data are provided.

D. Talia from CSI-CNR talks on “Implementing standard and nonstandard parallel cellular automata in CARPET”. CARPET is a cellular automata based language that has been implemented on MIMD parallel computers. The paper analyzes the main features of the language and describes how they can be exploited to implement different cellular automata on parallel computers.

E. Stuart, D. Bustard, and J. Weston in the paper “Information visualisation in numerical analysis” present details of a prototype software tool developed to address information visualisation requirements of numerical analysts.

B. Kumova has applied agents to implement a flexible distributed data base management system, where independent DDBM protocols are modular exchangeable. In her paper “Dynamic re-configurable transaction management in AgentTeam” she elaborates on the design of DDBM in form of a multi-agent system of the AgentTeam framework.

J-F. Myoupo and D. Seme present “Efficient BSR-based parallel algorithms for geometrical problems”. Three geometrical problems are considered, namely: point location, convex hull and smallest enclosing rectangle. These problems are solved in constant time using the BSR model.

The last paper of the session by G. Danese, I. de Lotto, F. Leporati, A. Quaglini, and S. Ramat “A parallel neurochip for neural networks implementing the reactive tabu search algorithm: application case” presents two different applications implemented on the neurocomputer Totem Nc3001 from Neuricam Inc. The objective of this experiment is to test on real problems the performance of this powerful parallel unit consisting in 32 digital signal processors, and to evaluate its suitability to neural network applications.