Guest Editorial

Partitioning is a fundamental problem in diverse fields of study. Taxonomy, pattern recognition, classification, data mining, storage of large data bases, and parallel processing are some of the areas where partitioning has been used. In the design of VLSI circuits, there are numerous applications of partitioning such as in circuit simulation, circuit packaging, placement, system emulation and rapid prototyping using FPGA technology, Synthesis of Multi-Chip Modules, and in many hierarchical methods and divide-and-conquer strategies. Partitioning is by no means a new problem. In fact, it may be considered by some as a classical problem, since it has covered extensively in the literature for many decades. However, this problem has never failed to renew itself with new applications and formulations. Another driving force in the continued interest with partitioning is the ever increasing design size that demands new and faster solution techniques.

In view of the diverse applications of partitioning and the age of the problem, it is not possible to cover all aspects of partitioning in this issue. It is hoped that the selected papers present a sufficiently diverse view of the many problem formulations and solution methodologies. The paper by Chen and Cheng is a tutorial which should be very useful to newcomers as well as to practitioners in the field of partitioning. The paper by Liu, Zhu, and Wong presents an interesting partitioning formulation as well as an elegant solution method using network flow techniques. The paper by Bazylevych, Melnyk, and Rybak tackle the problem of packaging using the optimal circuit reduction method. The paper by Caldwell, Khang, Markov introduces enhancements of iterative partitioning algorithms to overcome their limitations when circuit nodes have different sizes. The paper by Areibi and Vanelli introduces an effective tailoring of Tabu Search for the solution of circuit partitioning. The paper by Karypis and Kumar presents a multilevel k -way hypergraph partitioning algorithm. The paper of Saab presents another multilevel algorithm for 2-way partitioning.

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