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Guest Editor's Foreword

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This special issue of *Algorithmica* contains extended journal versions of six selected contributions to the 25th International Symposium on Algorithms and Computation (ISAAC), which was held in Jeonju, South Korea on December 15–17, 2014. The ISAAC is an established international conference where high-quality research papers in algorithms and theory of computation were presented. Among the presented papers, the following six papers were invited to this special issue, based on the evaluation by the program committee, and then went through the rigorous review process of *Algorithmica*.

The first paper, "Dynamic Algorithms for Multimachine Interval Scheduling through Analysis of Idle Intervals" by Gavruskin, Khoussainov, Kokho, and Liu, considers an interesting variant of the classic interval scheduling problem, which is to maintain a schedule with the minimum number of machines for a set of intervals under insertions and deletions. A main contribution of this work is a proof that any nested schedule uses the optimal number of machines, and every set of intervals admits a nested schedule. Based on this proof, the authors present an efficient data structure of maintaining the nested set dynamically.

The second paper, "On the Computational Complexity of Vertex Integrity and Component Order Connectivity" by Pål Grønås Drange, Markus Dregi, and Pim van 't Hof, considers the weighted vertex integrity problem for a vertex-weighted graph, which

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is to decide if there is a subset of the vertex set of an input graph satisfying a given weight constraint. The authors show that the problem is NP-complete on co-bipartite graphs, present an algorithm for the problem, and provide a bound on the size of a kernel that the problem admits.

The third paper, "A Short Implicant of a CNF Formula with Many Satisfying Assignments" by Daniel Kane and Osamu Watanabe, considers a satisfying assignment problem for a Boolean function with many satisfying assignments, which is to fix the minimum number of Boolean variables of a CNF formula in order to satisfy the formula by a partial assignment. The authors show that one can always find some short partial satisfying assignment for such a formula by fixing a certain number of variables. They also present a deterministic algorithm that finds a short partial assignment.

The fourth paper, "Faster Algorithms for Computing the R* Consensus Tree" by Jansson, Sung, Vu, and Yiu, considers a well-motivated problem from evolutionary biology, which is to compute the R* consensus tree of k rooted phylogenetic trees. The authors show how to compute R* consensus tree in quadratic-time for $k = 2$ and subcubic-time for $k > 2$, which are all improvements on the current fastest ones.

The fifth paper, "An FPTAS for The Volume Computation of $0-1$ Knapsack Polytopes Based on Approximate Convolution" by Ei Ando and Shuji Kijima, considers a problem of computing the volume of $0-1$ knapsack polytopes in high dimensional space, which is known to be #P-hard. The authors present a fully polynomial-time approximation scheme based on approximate convolutions for a deterministic approximation of volume computations, and give an extension of their scheme to multi-constrained knapsack polytopes with constant number of constraints.

The sixth paper, "The Power and Limitations of Static Binary Search Trees with Lazy Finger" by Prosenjit Bose, Karim Douïeb, John Iacono, and Stefan Langerman, considers the lazy finger search method of static binary search trees and provides a characterization on the best runtime for the optimal binary search tree. The authors also present a dynamic programming solution for computing the optimal tree for lazy finger given the pairwise frequencies.

We believe these six interesting papers show recent advances on various topics of theoretical computer science. We thank all authors for submitting their papers to this special issue, and all referees for their valuable comments that helped a lot to improve many aspect of the papers. Finally, we would like to thank the Editor-in-Chief, Ming-Yang Kao for making this special issue possible, and Melissa Fearon for her dedicated assistance.

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