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Guest Editors' Foreword

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The 26th International Symposium on Algorithms and Computation (ISAAC 2015) was held in Nagoya, Japan, December 9–11, 2015. The program committee received 180 high-quality submissions, and 65 were accepted for presentation. This special issue gathers a selection of five of these accepted papers, which went through the standard refereeing process of Algorithmica.

In the paper by Aline Saettler, Eduardo Laber and Ferdinando Cicalese, the authors characterize the best possible trade-off achievable when optimizing the construction of a decision tree with respect to both the worst and the expected costs, given a probability distribution on the input. For every $\rho > 0$, they show that there is a decision tree with worst-case cost of at most $(1+\rho)OPT_W + 1$ and expected cost at most $1/(1-e^{-\rho})OPT_E$, where OPT_W and OPT_E denote respectively the minimum worst-case cost and the minimum expected cost of a decision tree for the given instance. They also present an infinite family of instances for which this is essentially the best possible trade-off.

The paper by Sumedh Tirodkar and Sundar Vishwanathan is on the approximability of the minimum rainbow subgraph (MRS) problem, which has applications in computational biology. Given an n-vertex edge-colored undirected graph, the goal is to find a subgraph on a minimum number of vertices which has one induced edge of each color. By considering a colored version of the well-known k-densest subgraph

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problem, the authors give an $O(n^{1/3} \log n)$-approximation algorithm for the MRS problem, thus improving on the trivial $O(\sqrt{n})$-factor previously known for the problem. The authors also establish some approximation preserving reductions between various problems related to the MRS problem.

The paper by Jurek Czyzowicz, Leszek Gasieniec, Adrian Kosowski, Evangelos Kranakis, Danny Krizanc and Najmeh Taleb considers the problem of patrolling a graph with k robots, f of which can be faulty. The goal is to develop a patrolling strategy that minimizes *idleness*, defined as the maximum time period during which a "point" of the graph may remain unvisited by reliable patrolmen. The authors establish an (almost) optimal strategy when the graph is either a line segment or an Eulerian graph. They also show that computing the minimum idleness is NP-hard in general graphs, even for $k = 3$ and $f = 1$.

The paper by François Le Gall and Shogo Nakajima presents a quantum algorithm for triangle finding over sparse graphs that improves over the previous best quantum algorithm for this task. On a graph with n vertices and $m = n^{2-c}$ edges for some constant $c > 0$, their quantum algorithm has query complexity $\tilde{O}(n^{5/4-\epsilon})$, for some $\epsilon > 0$ that depends on c. More generally, they provide a range of values for the query complexity of the algorithm, depending on the sparsity of the graph.

In the paper by Qin Huang, Xingwu Liu, Xiaoming Sun and Jialin Zhang, the authors consider the problem of retrieving and/or sorting the top k elements in a dynamic data model where the underlying total order evolves over time, and can only be probed by a single pair-wise comparison at each time step. Under two probabilistic models of how the order changes over time, the authors determine a threshold for k below which the problem can be solved error-free with probability arbitrarily close to 1. They also show that the retrieval problem, where sorting is not required, can be solved error-free with probability arbitrarily close to 1, for all values of k.

Finally, we wish to thank the authors for the high quality of their contribution, and the anonymous referees for their timely and thoughtful reviews.