

PREFACE

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This special issue is dedicated to the 10th Colloquium on Optimization and Information Systems (COSI 2013) that took place at the Center for Development and Advanced Technologies in Algiers, Algeria, from June 9 to 11, 2013.

The aim of the COSI colloquia –all held in Algeria– is to bring together researchers from several fields of computer science: algorithms, combinatorial and continuous optimization, data bases, data mining, graph theory and image processing. The papers in this special issue concern mainly graph theory and optimization.

The first colloquium took place in 2004 at the University Mouloud Mamer in Tizi-Ouzou. It was considered by all who attended a big success. So the idea to repeat it on a regular basis once a year was greeted with enthusiasm. The next meetings were held in Bejaïa 2005, Algiers 2006, Oran 2007, Tizi-Ouzou 2008, Annaba 2009, Ouargla 2010, Guelma 2011 and Tlemcen 2012 and were greeted with equal enthusiasm. Each is scheduled for three days. On every day two plenary talks are given by well known specialists and four parallel sessions are held that cover the main fields of interest. In addition, time is provided for poster sessions.

Each colloquium prints a Proceedings of the accepted papers that is issued to all attendees. A scientific committee selects the papers that are printed and presented. On average, over the years from 2004 through 2013, 200 papers have been submitted and 40 accepted. The scientific committee of this Colloquium was chaired by Michel Habib of the University Paris 7: 172 papers were submitted, 30 accepted. The organizing committee was chaired by Samia Ourari from the Center for Development and Advanced Technologies in Algiers.

This issue of *RAIRO – Operations Research* contains a selection of papers presented in the conference or submitted separately. Thirty four manuscripts were submitted. After a thorough refereeing process, seven papers were accepted.

Amrouche Karim and Mourad Boudhar consider a two machines flow shop where a task may be reprocessed several time in the same machine. The authors assume that there is an identical time lag between the completion time in one machine and the starting time in the next machine. The goal is to minimize the completion time. They show NP-hardness results and polynomial solvable cases.

N.J. Rad and L. Volkmann study the minimum cardinality of a total outer- k -connected component dominating set of a simple undirected graph G , denoted by $\gamma_{tc}^k(G)$. Given a graph $G = (V, E)$, a subset $D \subseteq V$ is called total dominating if each vertex in $V \setminus D$ has a neighbor in D and the graph induced by D has no isolated node. A total dominating set D is a total outer- k -connected component dominating if the graph induced by $V \setminus D$ has exactly k connected components. They establish bounds and some exact values for $\gamma_{tc}^k(G)$ in some class of graphs.

Z. Habbas, K. Amroun and D. Singer introduce a compact representation of constraints table to solve non binary Constraint Satisfaction Problems (CSPs) using Generalized Hypertree Decomposition (GHD). To make the algorithm based on GHD compatible with their approach, they developed a new “compressed join” and “compressed semi-join” operations. Experimental results show the effectiveness performance of their algorithm when comparing with the algorithm proposed by Gottlob *et al.*

O. Gach and J.-K. Hao develop a new algorithm based on combined neighborhood tabu search for community detection in complex networks. They show that their algorithm competes favorably with state-of-the-art algorithms on 21 well-known benchmark instances.

K. Abdel-Aissanou, S. Berri, M. Bouhaddi and M.S. Radjef, study the security modeling of an *ad hoc* network under the constraint of energy. They introduce an interesting approach combining clustering and evolutionary game. The game they consider has two pure Nash equilibria. They show that these equilibria are evolutionary stable strategies and by using a probability distribution as an initial proportion of the population, they apply the replicator dynamic to study the evolution of the population associated to these two pure strategies.

F. Kara, P. Spiteri, F. Messine and A. Mohamed study a control optimal problem. They consider the optimal regulation of a large thermal process when the final state is fixed and the control is subject to some constraints. They develop a method based on the relaxation of these constraints combined with a shooting method. The example they study concerns the optimal control law for two ovens with three and twelve heating zones.

Finally, A. Quilliot and D. Rebaine study the well known linear ordering problem, they develop linear time algorithms on trees and divide-and-conquerer graphs.

On behalf of the scientific committee, we would like to thank all the authors who submitted their work to this issue and the reviewers for their excellent work. Moreover, we would thank Professor Ridha Mahjoub, Editor-in-Chief of *RAIRO – Operations Research*, for giving us the opportunity to edit this special issue, and the editorial assistant of the journal and the publisher for their great cooperation and the high quality of the production. We would also thank the local organizing committee for their great work.

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