Guest Editorial: Thematic Issue on “Memetic Algorithms: Theory and applications in OR/MS”

Enrique Alba · Mauricio G. C. Resende ·
María E. Urquhart · Meng-Hiot Lim

Published online: 29 May 2012
© Springer-Verlag 2012

The ALIO-INFORMS International Meeting is the joint conference of the biannual Latin-Iberoamerican Conference on Operations Research (CLAIO) organized by the Association of Latin-Iberoamerican Operational Research Societies (ALIO), and the international conference of the Institute for Operations Research and the Management Sciences (INFORMS). The meeting intends to emphasize the importance of the relationship between basic research and practice of OR/MS, and offers a forum for intellectual exchange between participants of all the countries of Latin and North America, as well as from other regions around the world.

This volume shows recent advances in Memetic algorithms in the areas of Operations Research (OR) and Management Sciences (MS). The papers in this thematic issue cover part of a large variety of subjects presented at the ALIO-INFORMS International meeting held in Buenos Aires, Argentina, in June 2010.

The first paper authored by Laura Cardona and Liana Amaya Moreno, presents a two-step model with the objective of reducing cash management costs, an important real-world

financial problem. The optimal allocation of resources was estimated showing that the model can be a helpful tool to support the determination of collections and supplies at the bank branch.

The second paper, by Jie Due and Roy Rada, examines the problem of including domain knowledge into evolutionary algorithms in order to obtain better fitness values in less time. A semantic tree of financial knowledge is used to influence the results of a genetic algorithm for financial investing problems, where the mutation is guided by a semantic tree of financial ratios.

The third paper, by Elizabeth G. Goldberg, Marco C. Goldberg and Paulo H. Asconavieta, develops the Traveling Car Renter Problem (CaRS), a generalization of the Traveling Salesman Problem. Two metaheuristic approaches and a set of benchmark instances are proposed and used on the computational experiments. The algorithms were tested on both Euclidean and non-Euclidean instances.

All these articles show different aspects of including problem knowledge into the solver technique, the key focus in memetic computing. We hope they will serve to illustrate and help future researchers on this topic.

We wish to express our sincere appreciation to all of those who helped in this project in one way or another. Special recognition is due to Natalio Krasnogor (Technical Editor-in-Chief) and Meng-Hiot Lim, (Managing Editor-in-Chief) of Memetic Computing for his confidence and great patience throughout all the revision process. Also we thank Srilakshmi Patrudu (Springer JEO Assistant) for her unfailing assistance during the whole process.

Very special thanks go to our anonymous reviewers. Without their expertise, time, and effort this issue would not have been possible. Finally, we thank all authors who submitted papers to this special issue, for their support to the ALIO-INFORMS 2010 and XV CLAIO.

E. Alba
University of Málaga, Málaga, Spain
e-mail: EAT@lcc.uma.es

M. G. C. Resende
AT and T Labs Research, Florham Park, NJ, USA
e-mail: mgrc@research.att.com

M. E. Urquhart
University of the Republic, Montevideo, Uruguay
e-mail: urquhart@fing.edu.uy

M.-H. Lim (✉)
School of EEE, Nanyang Technological University,
Singapore, Singapore
e-mail: EMHLIM@ntu.edu.sg

Guest Editors: Enrique Alba, Mauricio G. C. Resende and María Urquhart

Managing Editor's note

The three articles under the Thematic Issue of Memetic Computing have undergone careful review and deemed to be suitable and consistent with the theme of OR/MS. I commend the Guest Editors for their diligence in managing the review of the articles submitted for their Thematic Issue. Although the number of submissions intended for the Thematic Issue is adequate, their insistence on papers shortlisted for this issue adhere to the standard of the review process has resulted in only three papers making it in time for this issue.

To supplement this issue, a full-length regular research paper is included. The paper by Figueredo et al. deals with data classification. They propose a simple and fast immune-

inspired suppressive algorithm for instance selection; eliminating data that are irrelevant to the learning of a classifier. This form of regulation of the size of the data set results in fast and efficient building of classifiers with better accuracy, as shown by comparison against other instance selection algorithms.

The last article to make up this issue is a software review. It gives a detailed exposition of a problem-solving environment that facilitates the configuration of search algorithms—continuous and discrete domain problems. With a novel data structure to support the intricacy associated to representation and algorithmic flow, the article serves as a useful platform to support the development of search techniques consistent with the goals and objectives of memetic computation.

Managing Editor-in-Chief
Meng-Hiot Lim