
Editorial

Imed Kacem*

Département Informatique,
Université Paul Verlaine Metz,
UFR M.I.M., LITA,
Ile du Saulcy 57000 Metz, France
E-mail : kacem@univ-metz.fr
*Corresponding author

Govindan Kannan

University of Southern Denmark,
Odense 5230, Denmark
E-mail: gov@sam.sdu.dk

Biographical notes: Imed Kacem received his Diploma in Engineering from ENSAIT (French High School) and his MS degree from Lille 1 University, both in 2000; his PhD in Computer Science in 2003 from the Ecole Centrale de Lille and his Habilitation degree (HDR) from Paris-Dauphine University in 2007. He is a Full Professor at Paul Verlaine University of Metz (UPVM). His research interests include combinatorial optimisation and scheduling. He is the author of nearly 100 publications in refereed journals, conferences, books and chapters of books. He is the Area Editor for *Computers and Industrial Engineering*. He is one of the editorial board members of *European Journal of Industrial Engineering*, *International Journal of Advanced Operations Management*, *Advances in OR*, *IJAMC*, *JSCI*, *JPAM* and *JISE*. He was also the Organisation Chairman of CIE39, ICSSSM06 and WAC/ISIAC06 and he is listed in *Who's Who In the World*.

Govindan Kannan is an Associate Professor in Operations and Supply Chain Management in the Department of Business and Economics at University of Southern Denmark, Denmark. His research interests include supply chain management and reverse logistics. He received a gold medal for Best PhD Thesis Award. He is the Editor-In-Chief for *International Journal of Advanced Operations Management*, *International Journal of Business Performance and Supply Chain Modelling*, *International Journal of Logistics and Supply Chain Management* and *International Journal of Industrial Engineering Practices*. He has published 35 papers in refereed international journals and more than 50 papers in conferences.

First of all, I would like to express my thanks to Dr. Kannan Govindan, the Editor-In-Chief of *IJAOM* for accepting the idea to organise this special issue mainly based on some selected papers presented at the MOSIM'08 conference. His professional assistance was very helpful to achieve this issue in the best conditions.

MOSIM'08 (<http://www.mosim08.enstib.uhp-nancy.fr/>) or the *7th International Conference on Modelling and Simulation* has been held in Paris from March 31 to April 2, 2008. It has been the occasion to present 220 contributions selected from 379

submissions (included the special sessions). This represents a selection level of 59%. This event has attracted 85 articles from the outside of France and participants from 20 countries (most of them are French-speaking countries).

For all the submitted papers to this special issue, a new review process has been applied according to the journal standards. I would like to express my thanks to all the referees for their very helpful work and their contribution to the success of this project.

The main aim of this issue was to disseminate the new advances on optimisation in production systems. Such advances can be related to the theoretical level, to the methodological level or to the applicative level. The main motivation of this choice was the important role of scheduling and optimisation approaches in different industrial systems. Indeed, it is well-known that they can significantly improve the economical performance, the reliability and the robustness of these systems. That is why the design of effective scheduling and optimisation algorithms is becoming a challenging subject for numerous research teams from the entire world. This special issue is organised in five articles related to the considered scopes.

In the first paper, Laalaoui and Drias present a learning-based algorithm to deal with the deadline scheduling problem. This problem consists to construct feasible schedules of n tasks on m identical processors under some hard-real-time constraints. Two learning functions are used to ensure to obtain feasible schedules. The numerical experiments show an interesting performance of the proposed scheduling algorithm compared to the ACO heuristics and meta-heuristics. The paper proposes also an adaptation of the proposed algorithm in order to deal with the N-Queens problem and its possible applicability to cope with CSP problems.

In the second paper, Goncalves considered the vehicle routing problem with time windows and fuzzy demands (VRPTWFD). They proposed a fuzzy recourse model based on the possibility theory. The fuzzy version of a stochastic recourse model has been solved by a hybrid intelligent algorithm based on a stochastic simulation and a genetic algorithm. In order to evaluate the performance of the proposed algorithm, an adaptation of the Solomon's benchmark was proposed.

In the third paper, Li considered the make-to-order assembly lines which have gradually replaced the traditional mass production assembly lines. These assembly lines follow a 'make-to-order' production policy, which are featured with a short production lead time, small number of working stations and highly skilled workers. In order to maximise the throughput under the resource (machine, labour and time) constraints, the problem of minimising makespan with general precedence constraints is addressed in this paper. A mathematical model of the problem is presented and a new heuristic, genetic job-oriented list scheduling (GJLS) is proposed. Numerical experiments prove that the proposed algorithm is more effective than the existing Graham's list scheduling (GLS).

In the fourth article, Kanet and Li provide a new theorem for the weighted tardiness minimisation on a single machine. This theorem specifies necessary and sufficient conditions for adjacent job pairs in an optimum schedule. The authors proposed a straightforward proof and unified the related results. In particular, they generalised three disparate previous results. Moreover, they provided a short description of how the result could be useful to improve the effectiveness of search algorithms applied to the considered problem.

Finally, Duvivier et al. presented the results of a tabu search approach applied to a discrete-continuous highly constrained industrial scheduling problem. The objective is to generate the most appropriate scheduling strategy based on the decision makers'

preferences. A framework was implemented to schedule the products by using different optimisation and simulation approaches. The schedules are iteratively improved by applying a hybrid method (based on a meta-heuristic and a simulation model). Based on different performance criteria, the author compared and ranked some scheduling strategies.