

Call for papers for an invited session of IESM 2013

Hybrid metaheuristics and matheuristics for optimization of production systems

Description

This special session deals with new matheuristics and metaheuristics approaches for optimization of production systems

Production systems represent large investments for most industries and as a result of increasing competitive requirements many industrial companies have embarked on process improvement programs that often include the redesign of their manufacturing processes. The optimal design or reengineering of either existing systems of production or systems in phase of conception requires the study of various strongly interdependent problems. It is indeed necessary to structure the installations, to analyze the constraints, to size and to optimize the configuration of the production system and to analyze finely the dynamic functioning of the system to measure the impact of certain choices or determine the improvements to make. An effective implementation of these programs typically requires generative optimization tools and performance evaluation techniques for comparing various restructuring options. This issue aims at gathering all contributions, which address the design and optimization of production systems from a theoretical as well as a practical point of view.

We seek to collect the most recent advances in approach resolution techniques and specially combining mathematics modeling and metaheuristics (genetic algorithms, ant colony algorithms, particle swarm optimization, artificial immune systems etc.). The combination of the exact methods, as such based on the mathematical programming, with the metaheuristics may improve the quality of the obtained solutions. Different hybridization schemes combining mathematical programming algorithms with metaheuristics are used.

Topics of interest include, but are not limited to:

- Line design and balancing (machining, assembly and disassembly lines)
- Process planning and equipment selection
- Buffer allocation for production systems incorporating machines subject to partial failures
- Assembly line sequencing
- Planning and scheduling

This issue will be focused on hybrid Metaheuristics and Matheuristics which are a combination of metaheuristics and mathematical programming. The main idea, as recalled above, is to explore the information taken from the mathematical model of the considered problems. A quick check of the literature, we get some, but few, works with Matheuristics with either mathematical programming used to improve metaheuristics or metaheuristics used for improving mathematical programming methods.

Agenda

See the site of the conference IESM 2013 - www.iesm13.org

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