

Sessão 3B1

*Moderador: António J.S.T. Duarte***Escalonamento, Sequenciamento, Horários e Gestão de Projetos****An extended Akers graphical approach and a biased random-key genetic algorithm for the job-shop scheduling problem**

José Fernando Gonçalves

This paper presents a local search, based on a new neighborhood for the job-shop scheduling problem, and its application within a biased random-key genetic algorithm (BRKGA). After an initial active schedule is obtained by decoding the chromosome supplied by the BRKGA a local search heuristic, based on an extension of the graphical method of Akers (1956), is applied to improve the solution. The new heuristic is tested on a set of 205 standard instances and compared with results obtained by other approaches. The algorithm improved the best known solution values for 57 instances. Supported by project PTDC/EGE-GES/117692/2010.

Keywords: Jobshop, Biased Random-key GA, graphical approach

A model for scheduling aircrafts' engines repair process

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We address a real world scheduling problem concerning the repair process of aircrafts' engines at TAP Maintenance and Engineering (TAP-ME), the overhaul and repair division of the portuguese leading airline. TAP-ME aims to have a mathematical model for the engines repair process that determines the optimal sequencing of tasks within the workstations, in order to minimize total weighted tardiness, while assigning relative priorities to different clients. Based on classical jobshop problem, we developed a mixed integer programming model for the specific issues of the TAP engine repair process. We report results on data provided by TAP-ME respecting an ordinary week.

Keywords: Real world scheduling, Flexible job shop, Mixed integer linear programming

Optimização do escalonamento da produção na indústria de moldes

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Neste trabalho desenvolveu-se um modelo de programação linear inteira para o problema do escalonamento da produção no sector dos moldes, no qual Portugal tem um lugar de relevo a nível mundial. Nesta indústria, que produz em modo job shop, o escalonamento é realizado essencialmente por métodos tradicionais. O modelo desenvolvido foi aplicado a um caso real obtendo-se um plano de produção que foi comparado com o plano da empresa. Os resultados permitem perspectivar de forma positiva a futura integração deste modelo num sistema computacional de apoio ao escalonamento da produção de moldes.

Palavras chave: Escalonamento na indústria de moldes, Produção por encomenda, Programação linear inteira, Problemas job shop

Discrete lot sizing and scheduling on parallel machines: description of a column generation approach

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In this work, we study the discrete lot sizing and scheduling problem (DSLSP) in identical parallel resources with (sequence-independent) setup costs and inventory holding costs. We propose a Dantzig-Wolfe decomposition of a known formulation and describe a branch-and-price and column generation procedure to solve the problem to optimality. Preliminary results show that the lower bounds provided by the reformulated model are stronger than the lower bounds provided by the linear programming relaxation of the original model.

Keywords: DLSP, Lot sizing, Scheduling, Setup costs, Column generation, Branch-and-price