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PONENCIA INTERNACIONAL

VÉLEZ-GALLEGO, M. C., DAMODARAN, P., RODRÍGUEZ, M.
A greedy heuristic for makespan minimization on a batch processing machine with unequal job ready times.

En: Proceedings of ALIO-INFORMS Joint International Meeting, Buenos Aires, Argentina, June, 2010.

Abstract

A Batch Processing Machine (BPM) processes several jobs as a batch as long as its capacity is not violated. This research was motivated by an application in a manufacturing facility where a BPM is a bottleneck. Consequently minimizing the makespan is the objective. The batch processing time is given by the largest processing job in the batch, and its ready time is the largest ready time among the jobs in the batch. Given the problem is NP-hard we propose a greedy heuristic to solve the problem.

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PONENCIA INTERNACIONAL

VÉLEZ-GALLEGO, M. C., RODRÍGUEZ, M., DAMODARAN, P.
Makespan minimization on a single batch processing machine.

En: Proceeding of 5th ICPR Americas 2010, Bogotá, Colombia, Junio, 2010.

Abstract

A batch processing machine (BPM) can process several jobs simultaneously as a batch as long as its capacity is not violated. This research was motivated by a practical application observed at an electronics manufacturing facility where a BPM is a bottleneck and consequently minimizing the makespan is the primary objective. The batch processing time is the largest processing time among the jobs in the batch, and the batch ready time is the largest ready time among the jobs in the batch. Given that the

problem is NP-hard we propose a simulated annealing (SA) heuristic to solve the problem under the assumptions of non-identical job sizes and non-zero job ready times. The computational experiments conducted on a set of randomly generated problem instances show that the proposed SA approach outperforms other solution approaches available in the literature at a reasonable computational cost.

Keywords: Scheduling, batch processing machine, simulated annealing, heuristics

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GRUPO DE INVESTIGACIÓN EN INGENIERÍA, ENERGÍA, EXERGÍA Y SOSTENIBILIDAD (IEXS)

PUBLICACIÓN INTERNACIONAL

MARÍN VALLEJO, Ricardo; HENNEQUIN, Sophie; ADJALLAH, Kondo; HERNÁNDEZ LODUI, Mónica Patricia; DIAZ, Gabriel; y CASTAÑEDA, Leonel.

Fuzzy expert system for the control of a mult carburant internal combustion engine

In: 15th IEEE International Conference. Emerging Technologies and Factory Automation. September 13-16, 2010. Bilbao, Spain.

ISSN: 1551-3203

Abstract

Nowadays, the international community demands to develop new ways to diminish the effects on the growing environmental damage, either by changing development processes and products, or by developing new ways to make those existing products less harmful to the environment. This paper tries to develop an expert system based on fuzzy logic to reduce the pollution produced by spark ignition engines, taking into account not only the

carburant aspects, but also the actual state of the engine and the atmospheric condition to have a better view of the actual context in which the engine is working. The results are part of a collaborative project between EAFIT and LGIPM.

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GRUPO DE INVESTIGACIÓN EN INGENIERÍA DE DISEÑO (GRID)

PUBLICACIÓN INTERNACIONAL

CORREA, Santiago; MILITELLO M.; and RECUERO M. Acoustic displacement tetrahedra developed using the IET rules

Source: Computers and Structures Volume 88, Issue 17-18 (September 2010) Pages: 985-990, Year of Publication: 2010.

ISSN:0045-7949

Publisher: Pergamon Press, Inc. Elmsford, NY, USA.

Bibliometrics : Downloads (6 Weeks): n/a, Downloads (12 Months): n/a,

Citation Count: 0. SCOPUS.

<http://portal.acm.org/citation.cfm?id=1837530.1837732&coll=portal&dl=GUIDE>

Abstract

A four node, displacement based, acoustic element is developed. In order to avoid spurious rotational modes, a higher order stiffness is introduced. The higher order stiffness is developed from an incompatible strain field which computes element volume changes under nodal rotational displacements fields. The higher order strain satisfies the IET requirements, non affecting convergence. The higher order stiffness is modulated, element by element, with a factor. Thus, the displacement based formulation is capable of placing the spurious rotational modes over the range

of physical compressional modes that can be accurately captured by the mesh.

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PUBLICACIÓN INTERNACIONAL

PEÑARANDA, Nicolás; MEJÍA, Ricardo; ROMERO, David and MOLINA, Arturo.

Implementation of Product Lifecycle Management Tools using Enterprise Integration Engineering and Action-Research

In: International Journal of Computer Integrated Manufacturing, Vol. 23, No.10. pp. 853 – 875. (2010)

ISSN: 1362-3052

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Indexación: SCOPUS; ISI WEB OF KNOWLEDGE; INFORMA WORLD; ACM

Available on-line: <http://dx.doi.org/10.1080/0951192X.2010.495136>

Abstract

This paper describes how enterprise integration engineering (EIE) and action-research (A-R) can be used to support the implementation of product lifecycle management (PLM) tools. The EIE concept is used to align the corporate strategies with the use of PLM technologies in order to impact the key performance indicators (KPIs) in the enterprise. An EIE reference framework is proposed to define strategies, evaluate performance measures, design/re-design processes and establish the enabling tools and technologies to support the enterprise strategies, while A-R is proposed to guide the PLM tools implementation at various stages of the product development process. An industrial application is described to demonstrate the benefits of applying EIE, A-R and PLM in an enterprise.

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