Algorithmic Operations Research

Theoretical aspects of scheduling coupled-tasks in the presence of compatibility graph

G. Simonin, B. Darties and R. Giroudeau

Volume 7, Number 1, Spring 2012

URI: https://id.erudit.org/iderudit/aor7_1art01

See table of contents

Publisher(s)

Preeminent Academic Facets Inc.

ISSN

1718-3235 (digital)

Explore this journal

Cite this article

Simonin, G., Darties, B. & Giroudeau, R. (2012). Theoretical aspects of scheduling coupled-tasks in the presence of compatibility graph. *Algorithmic Operations Research*, 7(1), 1–12.

Article abstract

This paper presents a generalization of the coupled-task sche-duling problem introduced by Shapiro [12], where considered tasks are subject to incompatibility constraints depicted by an undirected graph. The motivation of this problem comes from data acquisition and processing in a mono-processor torpedo used for underwater exploration. As we add the compatibility graph, we focus on complexity of the problem, and more precisely on the boundary between P and N P-completeness when some other input parameters are restricted (e.g. the ratio between the durations of the two sub-tasks composing a task): we adapt the global visualization of the complexity of scheduling problems with coupled-task given by Orman and Potts [11] to our model, determine new complexity results, and thus propose a new visualization including incompatibility constraints. In the end, we give a new polynomial-time approximation algorithm result which completes previous works.

All rights reserved © Preeminent Academic Facets Inc., 2012

érudit

This document is protected by copyright law. Use of the services of Érudit (including reproduction) is subject to its terms and conditions, which can be viewed online.

https://apropos.erudit.org/en/users/policy-on-use/

This article is disseminated and preserved by Érudit.

Érudit is a non-profit inter-university consortium of the Université de Montréal, Université Laval, and the Université du Québec à Montréal. Its mission is to promote and disseminate research.

https://www.erudit.org/en/

UNIVERSITÉ MONTPELLIER II – CNRS Unité Mixte 5506



LI I I IVI Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier

Rodolphe GIROUDEAU

Dear Referees,

Please find below, an article entitled "Theoretical aspects of scheduling coupled-tasks in the presence of compatibility graph".

The corresponding author is Giroudeau Rodolphe : rgirou@lirmm.fr and postal address is

Giroudeau Rodolphe LIRMM - UMR 5506 - CC 477 161 rue Ada 34095 Montpellier Cedex 5 - France

Best regards,

Rodolphe Giroudeau

Montpellier, 6 September 2011