

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

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Article abstract

This paper presents a generalization of the coupled-task scheduling 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 NP-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.



Rodolphe GIROUDEAU

Dear Referees,

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

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Best regards,

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