EXACT AND APPROXIMATION ALGORITHMS FOR THE TACTICAL FIXED INTERVAL SCHEDULING PROBLEM

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The Tactical Fixed Interval Scheduling Problem (TFISP) is the problem of determining the *minimum number* of parallel non-identical machines, such that a feasible schedule exists for a given set of jobs. In TFISP each job must be carried out in a prespecified time interval and belongs to a specific job class. The problem is complicated by the restrictions

- (i) that each machine can handle only one job at a time,
- (ii) that each machine can handle only jobs from a subset of the job classes, and
- (iii) that preemption is not allowed.

In this presentation we discuss the occurrence of TFISP in practice, we analyze the computational complexity of TFISP, and we present exact and approximation algorithms (with error bounds) for solving TFISP. The paper is concluded with a computational study.

Keywords:

Fixed interval scheduling, heuristics, integer programming, Lagrangean relaxation, non-preemptive scheduling, upper and lower bounds.