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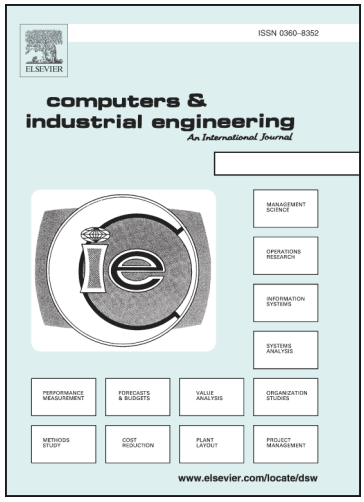

Recent advance in hybrid evolutionary algorithms for multiobjective manufacturing scheduling

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RECENT ADVANCE IN HYBRID EVOLUTIONARY ALGORITHMS FOR MULTIOBJECTIVE MANUFACTURING SCHEDULING

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ABSTRACT

In real manufacturing systems there are many combinatorial optimization problems (COP) imposing on more complex issues with multiple objectives. However it is very difficult for solving the intractable COP problems by the traditional approaches because of NP-hard problems. For developing effective and efficient algorithms that are in a sense "good," *i.e.*, whose computational time is small as within 3 minutes, we have to consider three issues: quality of solution, computational time and effectiveness of the nondominated solutions for multiobjective optimization problem (MOP).

In this paper, we focus on recent *hybrid evolutionary algorithms* (HEA) to solve a variety of single or multiobjective scheduling problems in manufacturing systems to get a best solution with a smaller computational time. Firstly we summarize *multiobjective hybrid genetic algorithm* (Mo-HGA) and *hybrid sampling strategy-based multiobjective evolutionary algorithm* (HSS-MoEA) and then propose *HSS-MoEA combining with differential evolution* (HSS-MoEA-DE). We also demonstrate those hybrid evolutionary algorithms to *bicriteria automatic guided vehicle* (B-AGV) dispatching problem, *robot-based assembly line balancing problem* (R-ALB),