

A particle swarm optimization algorithm for part-machine grouping.

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Abstract

Although in the last years different metaheuristic methods have been used to solve the cell formation problem in Group Technology, this paper presents the first particle swarm optimization (PSO) algorithm designed to address this problem. PSO is a population-based evolutionary computation technique based on a social behavior metaphor. The criteria used to group the machines in cells is based on the minimization of inter cell movements. A maximum cell size is imposed. Some published exact results have been used as benchmarks to assess the proposed algorithm. The computational results show that the PSO algorithm is able to find the optimal solutions on almost all instances.

Keywords: Cellular manufacturing, part machine grouping problem, particle swarm optimization.

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