An Efficient Approach for Cell Formation Problems and its Variants

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ABSTRACT

Group technology (GT) has been attracting attention from practitioners and researchers. Cellular manufacturing system (CMS) is an application of GT. Cell formation is one of the core for the CMS. Due to its characteristic of NP-Complete, it often consumes too much time in obtaining optimal solutions or even good solutions. This research proposes solution algorithms for the cell formation problem and its variant. The proposed algorithm is developed on the basis of an SA based algorithm from the literature. We embed a new idea which aims at reducing the number of exceptional element so that a good parts formation can be found during the generation of neighborhood solution. Computational results obtained by running test instances (benchmarking problems) were compared with those from the literature show the proposed algorithms perform well in terms of the grouping efficiency and efficacy.

Keywords : cell formation ; exceptional element ; simulated annealing

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