A Heuristic Approach for Solving Irregular Shapes Packing Problem

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ABSTRACT

packing and cutting irregular objects are difficulties frequently faced by the industries, such as shoes making, textile, steel, clothing,and furniture, etc. As it is known, cutting down material cost would make enterprise more competitive. Many researchers hence devote on developing algorithms to solve this so called cutting and packing problem, in order to obtain a good (optimal or near optimal) pattern in an acceptable time. Due to its being NP hard-type problem, optimization approach can hardly solve a real sized problems. Heuristic approaches are hence favored by researchers and practitioners. A bottom-left based heuristic algorithm is proposed in this research to solve this sort of problem. During the bottom-left based heuristic algorithm, the minimum enclosure rectangles for each irregular object is first calculated. Grouping analysis is next performed. For those grouped objects having better utilization rate, minimum enclosure rectangle is then generated. The entire bottom-left based heuristic algorithm is proceeded by packing these minimum enclosure rectangles. A real example from shoe industry is used for the illustrative purpose.

Keywords : 不規則物件排列、模擬退火演算法

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