

Abstract

Harmony Search is a metaheuristic algorithm inspired by musical instrument tones improvisation process phenomenon to create harmony together. The algorithm can solve complex combinatorial problem better than other metaheuristic algorithms in some cases.

This final project implements Harmony Search to optimize Cutting Stock Problem, which is a problem that has large-sized material (stock material) which is going to be cut into smaller pieces (order). The type of form of the order which is going to be discussed in this final project is polygon. Aside from that, Bottom Left Fill algorithm is used to map orders to stock material.

The goal of this final project is to find the right cutting pattern so the optimal loss of leftover stock material used (trim loss) can be obtained. Experimental results from this final project show Harmony Search better performance compared to other optimization algorithms although could not achieve current known optimal solution.

Keywords: *harmony search, metaheuristic, cutting stock problem, polygon, bottom left fill*