A CROSS ENTROPY-GENETIC ALGORITHM APPROACH FOR m-MACHINES NO-WAIT JOB-SHOP SCHEDULING PROBLEM

Student Name : MUHAMMAD ARIF BUDIMAN
Student ID Number : 2506100159
Department : Industrial Engineering ITS Sby
Supervisor : Ir. Budi Santosa, M.S., Ph. D.
Co-Supervisor : Stefanus Eko Wiratno, S.T., M.T.

ABSTRACT

No-wait job-shop scheduling (NWJSS) problem is one of the classical scheduling problem which is exist on many kinds of industries with no-wait constraint, such as metal working, plastic, chemical, and food industries. Several methods have been used for solving this problem, whether with exact (i.e. integer programming) or metaheuristic methods. Cross entropy, as a new metaheuristic method, can be an alternative method to approach to NWJSS problem. This method has been used in combinatorial optimization, also multi-external optimization and rare-event simulation. On these problems, cross entropy implementation result an optimal value with less computation time, i.e. on Support Vector Machines problem. This research will implement cross entropy method combined with genetic algorithm (cross entropy – genetic algorithm/CEGA) on m-machines NWJSS, then compare the result with the other methods on the same problem. The expected result of this research is a developed-algorithm based on cross entropy method used for NWJSS problem, for getting a better makespan result.

Keywords: no-wait job-shop scheduling, cross entropy, genetic algorithm, optimization, metaheuristic

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