

Kan Plongon 2008: A Genetic Algorithm for Non-Identical Parallel Machine Scheduling Problems with Earliness and Tardiness Penalties. Master of Engineering (Industrial Engineering), Major Field: Industrial Engineering, Department of Industrial Engineering. Thesis Advisor: Mr. Wisut Supithak, Ph.D. 127 pages.

The paper considers the scheduling problem of non-identical parallel machines with distinct due date jobs. The objective is to determine the schedules such that the sum of earliness and tardiness costs of all jobs is minimized. In order to reduce the solution space, the problem is transformed to the sequencing problem. The genetic algorithm is applied to find the good job sequence. The optimal timing algorithm is then applied to determine the best schedule for each sequence. This heuristic is called the GAOPT.

The GAOPT heuristic proposed in this study is compared with the simple heuristics, EDDOPT and RNDOPT. The results showed that the GAOPT can outperform the other two heuristics at different problem sizes and ratio of earliness to tardiness penalties.

Student's signature

Thesis Advisor's signature

____ / ____ / ____