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WORKING PAPER

A Genetic Algorithm for the Single Machine Maximum Lateness Problem

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Abstract

We consider the problem of scheduling a number of jobs, each job having a release time, a processing time and a due date, on a single machine with the objective of minimizing the maximum lateness or tardiness. This problem often occurs as a sub-problem in solving other scheduling environments such as flow shops or job shops. We developed a genetic algorithm and compared its performance with alternative methods on diverse data sets. Based on a literature study on genetic algorithms in single machine scheduling, a fair comparison of genetic operators was made. We performed an extensive study of local search algorithms, based on the trade-off between the intensification and diversification strategy. Computational results further revealed that combining different neighborhoods in an intelligent manner can remarkably improve the solution quality.

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