# Solving Single Machine Total Weighted Tardiness Problem Using Gaussian Process Regression

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**Abstract :** This paper proposes an application of probabilistic technique, namely Gaussian process regression, for estimating an optimal sequence of the single machine with total weighted tardiness (SMTWT) scheduling problem. In this work, the Gaussian process regression (GPR) model is utilized to predict an optimal sequence of the SMTWT problem, and its solution is improved by using an iterated local search based on simulated annealing scheme, called GPRISA algorithm. The results show that the proposed GPRISA method achieves a very good performance and a reasonable trade-off between solution quality and time consumption. Moreover, in the comparison of deviation from the best-known solution, the proposed mechanism noticeably outperforms the recently existing approaches.