

ABSTRACT:

In this study, two computational approaches, Genetic Algorithm and Simulated Annealing, are applied to search for a set of optimal process parameters value that leads to the minimum value of machining performance. The objectives of the applied techniques are: (1) to estimate the minimum value of the machining performance compared to the machining performance value of the experimental data and regression modeling, (2) to estimate the optimal process parameters values that has to be within the range of the minimum and maximum coded values for process parameters of experimental design that are used for experimental trial and (3) to evaluate the number of iteration generated by the computational approaches that lead to the minimum value of machining performance. Set of the machining process parameters and machining performance considered in this work deal with the real experimental data of the non-conventional machining operation, abrasive waterjet. The results of this study showed that both of the computational approaches managed to estimate the optimal process parameters, leading to the minimum value of machining performance when compared to the result of real experimental data.