This paper considers a single machine family scheduling problem where jobs are partitioned into families and setup is required between these families. The objective is to find an optimal schedule that minimizes the total weighted completion time of the given jobs in the presence of the sequence independent family setup times. This problem has been proven to be strongly NP-hard. We introduce a genetic algorithm that employs an innovative crossover operator that utilizes an undirected bipartite graph to find the best offspring solution among an exponentially large number of potential offspring. Computational results are presented. The proposed algorithm is shown to be superior when compared with other local search methods namely the dynamic length tabu search and randomized steepest descen

Keywords:
- genetic algorithm
- single machine scheduling
- completion time

Link to the paper:
https://www.civilica.com/Paper-ICNMO01-ICNMO01_114.html