Abstract

Scheduling and timetabling problems are multi-constrained constraint satisfaction problems that have huge search space. These problems are NP hard. This paper investigates the use of backtracking approaches to laboratory personnel scheduling problem in which the objective is to assign tasks to employees. The main objective of this work is to search for better solutions than those obtained by authors using genetic algorithmic approach. The performance of backtracking algorithms is tested for different variable orderings, value ordering and consistency enforcement techniques. It is observed that the variable and value ordering backtracking with consistency enforcement techniques gives better results than the chronological backtracking as well as the results reported in the literature. This work indicates that the problem instance under consideration might have even better solutions which can possibly be obtained by suitably modifying the genetic algorithmic approach used earlier by authors or by using other optimization techniques such as simulated annealing or Tabu search.
- Bartak, R. Constraint propagation and backtracking based search.
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Index Terms

Computer Science
Algorithms

Keywords
Personnel scheduling  Timetabling  Backtracking  Value ordering  Variable ordering  Consistency enforcement techniques. Genetic algorithms