A Hybrid Genetic Algorithm Approach to a Departmental Class Timetabling Problem Using Efficient Data Structures

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Abstract

The application of Genetic Algorithm with a local search operation performed within its loop has provided very accurate results, but the algorithm take a lot of time to arrive at an optimal solution. This paper describes the use of a Hybrid Genetic Algorithm using efficient data structures to automate the construction of a departmental class timetable. This problem is concerned with the allocation of faculty resources to concerned student groups and their corresponding timeslots. The quality of the solution is determined in terms of a penalty value which determines the degree to which various constraints are satisfied. This algorithm is tested over established datasets and the performance of the algorithm over different datasets. The result has confirmed that this algorithm in conjuncture with efficient data structures is able to produce high quality solutions for a departmental class timetable with short span of time. It is thus concluded that organization of data plays a major role in the performance of the Hybrid Genetic Algorithm to produce high quality solutions.

Reference

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Index Terms

Computer Science Programming Languages

Key words

Hash Hard

and soft constraints

Hybrid GA

Local search