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A DYNAMIC LOCAL SEARCH FOR SOLVING THE STATIC FREQUENCY ASSIGNMENT PROBLEM

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ABSTRACT

This study proposes a novel approach to solve a variant of the frequency assignment problem known as the static minimum order frequency assignment problem. This problem involves assigning frequencies to a set of requests while minimizing the number of frequencies used. This approach solves the static problem by modeling it as a dynamic problem through dividing this static problem into smaller sub-problems, which are then solved in turn in a dynamic process using an improved local search algorithm. Several novel and existing techniques are used to improve the efficiency of this approach. This includes a technique that aims to determine a lower bound on the number of frequencies required from each domain for a feasible solution to exist in each sub-problem, based on the underlying graph coloring model. These lower bounds ensure that the search focuses on parts of the solution space that are likely to contain feasible solutions. Another technique, called the gap technique, aims to identify a good frequency to be assigned to a given request. Our approach was tested on real and randomly generated benchmark datasets of the static problem and achieved competitive results.

KEYWORDS: *Frequency Assignment*

Article History

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