Minimum Weight Dominating Set

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***Abstract* –...**

***Resumo* –...**

I. Introduction

Consider a finite, undirected graph $G(V, E)$, where V is the set of graph vertices and E is the set of graph edges. Two vertices u, v of G connected by edge (u, v) are called adjacent nodes. Two edges which share a vertex are also called adjacent. One edge *dominates* its adjacent. A set of edges M of G is called an *edge dominating set* if all edges of set $E - M$ are adjacent, and thus dominated, by the edges of M [1]. The weight of an edge dominating set is the sum of its edges' weight. A *minimum weight edge dominating set* is an edge dominating set whose total weight is as small as possible.

The objective behind this report is to apply exhaustive search and greedy algorithms to retrieve the minimum weight edge dominating set for a general graph G. The report is divided in five section: the first (section I), where the problem is introduced; the second (section II), where the algorithms used are described; the third (section III), where a formal analysis for the algorithms is presented; the fourth (section IV), where results for experiments conducted with the algorithms are detailed; and the fifth (section V), where conclusions are extracted.

II. Algorithms Used

III. Formal Analysis

IV. Results

V. Conclusions

References

[1] Mihalis Yannakakis and Fanica Gavril, "Edge dominating sets in graphs", *SIAM J. Appl. Math.*, vol. 38, pp. 364–372, 06 1980.