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A dynamic programming approach to the dominating set problem on k-trees. (English)

Zbl 0635.05040

SIAM J. Algebraic Discrete Methods 8, 535-543 (1987).

Summary: Dynamic programming has long been established as an important technique for demonstrating the existence of polynomial time algorithms for various discrete optimization problems. In this paper we extend the normal paradigm of dynamic programming to allow a polynomial number of optimal solutions to be computed for each subproblem. This technique yields a polynomial time algorithm for the dominating set problem on k-trees, where k is fixed. It is also shown that the dominating set problem is NP- complete for k-trees where k is arbitrary.

MSC:

05C70 Edge subsets with special properties (factorization, matching, partitioning, covering and packing, etc.)

Cited in 20 Documents

05C05 Trees

68R10 Graph theory (including graph drawing) in computer science

05C99 Graph theory

Keywords:

chordal graphs; dynamic programming; dominating set; k-trees

Full Text: DOI

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