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Limiting the Search for 2-Dimensional Optimal Alphabetic Trees

by

Ahmed Belal
Dept. of Computer Science & Automatic Control
Faculty of Engineering
Alexandria University
Egypt

Magdy A.Ahmed
Dept. of Computer Science & Automatic Control
Faculty of Engineering
Alexandria University
Egypt

Shymaa M.Arafat
Informatics Institution
Mubarak City for Scientific Research
Alexandria
Egypt

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ABSTRACT

Two-dimensional alphabetic trees have many applications in a wide variety of diverse fields. Despite the existense of a relatively fast algorithm that finds an approximate 2-dimensional optimal alphabetic tree(OAT), a dynamic programming approach must still be used to determine the exact solution.To apply dynamic programming, the (OAT) can be found by examining all the nodes in the 2-d array of weights as possible roots for the optimal tree. In this paper we introduce the concept of *goodness* for each cut to limit the search for an optimal solution.The measure of goodness is a value we call *the expense of the cut*, only cuts with expense less than a given limit L are considered *good cuts*. At every level of the tree only the good cuts are tested as possible candidates for an optimal solution.

Key Words : alphabetic tree, optimal tree, dynamic programming, two dimensional alphabetic trees, branch and bound.