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Hierarchical Fast Decoding of Fractal Image Representation Using Quadtree Partitioning

Ilan Sutskover and David Malah

Department of Electrical Engineering
Technion - Israel Institute of Technology
Haifa 32000, Israel

Abstract

Fractal image coding using either fixed-size blocks or variable-size blocks in a quadtree structure is by now common. However, a fast decoding algorithm based on a hierarchical representation, which requires only a finite number of iterations to reach the exact fixed point of the fractal transformation, has been shown only for fixed-size blocks. In this work, a generalization of the fast decoding algorithm is made, enabling its use with a quadtree image partitioning. A theorem extending the hierarchical representation of the fractal transform fixed point to include quadtree partitioning is given and proved.