

Fast Texture Synthesis in Adaptive Wavelet Packet Trees

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Abstract

Wavelet packet transform known as a substantial extension of wavelet transform has drawn a lot of attention to visual applications. In this paper, we advocate using adaptive wavelet packet transform for texture synthesis. The adaptive wavelet packet coefficients of an image are organized into hierarchical trees called adaptive wavelet packet trees, based on which an efficient algorithm has been proposed to speed up the synthesis process, from the low-frequency tree nodes representing the global characteristics of textures to the high-frequency tree nodes representing the local details. Experimental results show that the texture synthesis in the adaptive wavelet packet trees (TSIAWPT) algorithm is suitable for a variety of textures and is preferable in terms of computation time.

Keyword : texture synthesis, multi-resolution process, wavelet packet transform, adaptive wavelet packet trees