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DCT域音频水印透明健壮算法

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摘要 提出一种新的基于离散余弦变换的数字音频水印算法。把音频信号划分为包含相同采样点的若干帧，每帧划分为若干节。对指定帧的第一节、第二两节实施DCT变换，将二者DCT中、高频系数的绝对值之和进行比较，结合水印序列为“0”或“1”，采取不改变、缩小及增加中、高频DCT系数的方法，在DCT系数中嵌入水印。实验证明，该算法具有较强的健壮性，较好的透明性，提取水印属盲水印提取，能经受重采样、重新量化、添加噪声、低通滤波、音频格式转换等常见信号处理及攻击。

关键词 音频水印 离散余弦变换 透明 健壮 盲检测

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Transparent and robust audio watermarking algorithm based on DCT domain

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Abstract

This paper proposes a new algorithm of digital audio watermarking based on the discrete cosine transform.The audio signal has been divided into several frames which include the same samples，and the frame has been divided into several sections which include the same samples.The first section and second section of the specified frame has been transformed by discrete cosine，the sum of the absolute value of the middle and high frequency DCT coefficient has been compared，according to the result of comparison and combining watermark bit，adopting the way of not changing，increasing or reducing coefficient of the DCT，watermarks has been embedded into the DCT coefficients.The result demonstrates that the algorithm is robust，transparent and blind against common signal processing manipulations and attacks，such as re-sample，remodulation，noise，low-pass filter and conversion etc.

Key words audio watermarking Discrete Cosine Transform（DCT） transparentness robustness blind-detection

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