A Low Complexity Wavelet Based Audio Compression Method

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Multimedia computing is becoming of increasing importance to modern telecommunications. Audio compression is an integral part of multimedia applications. The unique operating environment of multimedia computing imposes many unique requirements on the audio compression algorithm, including high compression rate, low-complexity, and the ability of handling different audio sources. On the other hand, these requirements are not met by most of the audio compression methods that have been developed.

In this paper, we present a low-complexity wavelet based audio coding algorithm that is capable of handling arbitrary audio sources, including music and speech. The algorithm transforms incoming audio data into the wavelet domain, and compresses data by exploring redundancy in the wavelet coefficients. A bit rate control scheme is designed such that the algorithm operates at virtually any preselected bit rate. This algorithm is of very low complexity, and can be implemented in real-time using a fraction of 486DX-33 or faster personal computer. The superior performance of this algorithm is also demonstrated by comparing it with several other popular audio compression techniques. This algorithm meets or exceeds the requirements of multimedia computing and could be used as a standard for such applications.

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