

Digital audio and speech watermarking based on the multiple discrete wavelets transform and singular value decomposition

ABSTRACT

The ever-increasing illegal manipulation of genuine audio products has been a dilemma for the music industry. This situation calls for immediate, yet effective, solutions to avoid further financial losses and intellectual property violations. Audio and speech watermarking has been proposed as a possible solution, since this technology embeds copyright information into audio files as a proof of their ownership. In this paper, we propose an effective, robust, and an inaudible audio and speech watermarking algorithm. The effectiveness of the algorithm has been brought by virtue of applying a cascade of two powerful mathematical transforms; the discrete wavelets transform (DWT) and the singular value decomposition (SVD). Experimental results will be presented in this paper to demonstrate the effectiveness of the proposed algorithm.

Keyword: Speech watermarking; Discrete wavelets transform; Singular value decomposition; Robust and inaudible watermarking; Copyright protection; Ownership verification