Abstract

In this paper, a new phase coding method is used to embed any watermark data type (text, image, audio) in audio signals. The basic idea is to segment the audio signal and transforming it using the Discrete Fourier Transformation (DFT) and then embedding the watermark in the initial phase coefficients for every four segments. The used cover audio files of WAV type. The watermark can be extracted semi-blindly. Performance of the proposed watermarking methods was tested by using normalized correlation (NC) and bit error rates (BER) to measure the robustness, and signal to noise ratio (SNR) to evaluate the imperceptibility of our proposed methods. Experimental results show superiority of the proposed scheme in terms of robustness, inaudibility and capacity compared to the traditional phase coding method. The best audio test sample shows that the SNR value was above (20 dB) for (250 byte) watermark capacity with high robustness against cropping attack and showed modest robustness against some type of attacks.

References

Modified Phase Coding Audio Watermarking Resistant to Signal Attacks


Index Terms
Computer Science
Security

Keywords
Audio watermarking; Phase coding; DFT; Semi-blind detection; Robustness; inaudibility.