Abstract

Digital audio watermarking performs the process of embedding a perceptually transparent digital signature carrying a message about the host signal into a host audio signal. A technique of digital audio watermarking using lifting based wavelet transform (LWT) and singular value decomposition (SVD) is applied to watermark Indian classical songs. In order to confirm the security and improve the robustness of the audio watermarking scheme, binary watermark image encrypted using Arnold transform is used. The encrypted watermark bits are embedded into the singular values of the coefficient matrix of LWT low frequency subband through quantization index modulation (QIM). In order to evaluate the performance of the LWT-SVD based audio watermarking method, subjective and objective quality tests are conducted. Investigations are performed using different wavelets and the performance parameters show that Daubechies (Db4) wavelet is more suited for watermarking of Indian classical songs. Robustness of the algorithm is analyzed by including additive white gaussian noise, denoising, and resampling.
- Yang S., Tan W., Chen Y., and Ma W., 2010, Quantization-Based Digital Audio

Index Terms

Computer Science
Signal Processing

Keywords

Audio watermarking  lifting based wavelet transform  singular value decomposition  Arnold transform  quantization index modulation  Indian classical songs.