

Abstract

Audio watermarking is a method of information data hiding embedding information into other audio file, but it's imperceptible by human perception and robust to digital signal processing (i.e. cropping, resampling, compression, etc) until certain term.

At this final assignment, it had implemented a method of audio watermarking with combination of DWT and DCT at embedding process and adding SVR method at extraction process. Audio file which is used in this system is audio with *.wav format and the watermark is binary image $M \times N$. The output of this system then tested using objective and subjective test to know the quality of audio watermarked and the result of watermarking image. Beside, to know the robustness of this method to digital signal processing, it tested with compression, resampling, and low pass filtering.

From the testing result, audio watermarked is influenced by payload, level of DWT, and type of wavelet, while the quality of images watermark is influenced by template information, kernel's type, value of C , value of epsilon and the parameter that used at embedding process. The SNR that we get is lower enough but subjective tested result show audio watermarked still have almost the same with original audio file for level of $DWT=1$. On the other side, the quality of image result of watermark is very good for linear and RBF kernel with value of $C=5$, value of epsilon=0,001 that is reaching $BRR=1$. Based on robustness testing, the system is robust enough for compression and resampling 22,05 kHz.

Keywords: *Audio watermarking, DWT, DCT, Support Vector Regression*