ABSTRACT

The advance of video sharing on the internet has put its copyright at risk. Once uploaded, it is hard to control the distribution and further action to the video including illegal copying and editing. Video watermarking is a way to answer this threat. Watermarking has been developed to protect copyright of digital file including video.

This research embeds image watermark to several frames of video detected as scene change. The combination of Discrete Wavelet Transform and Discrete Cosine Transform which gives better PSNR of watermark file is used. The ll band of watermark is mixed with the hh band of frame using alpha (0.01, 0.03, 0.05, 0.08, 0.1, 0.3, 0.5 and 0.8) as the weight of watermark. The experiment result shows that larger alpha reduces the watermarked video fidelity more. The optimum alpha is 0.1 which still give watermarked video PSNR >30dB. From data payload point of view, the watermarked video has the same file size with the original video.

Fast-ICA algorithm which is famous for the cocktail party problem is used to extract watermark from the video. The extraction process result good extracted video (PSNR >50dB) but low extracted watermark quality (PSNR <2dB) due to the ambiguity of Fast-ICA. However this method is robust to noise because same or better watermark PSNR is resulted even from 5dB SNR attack.

Keywords: **Video Watermarking, Discrete Cosine Transform, Discrete Wavelet Transform, Fast-ICA Algorithm**