

ABSTRACT

Video piracy is the act of obtaining, copying and selling or distributing videos that already had the copyright without the consent of the copyright owner. Over the past decade, online video piracy has become a significant concern for film producers. Digital video watermarking is a way to restrict the illegal digital distribution. Watermarking is a process which embeds an additional information in the host video signal so that the embedded watermark can not be seen and difficult to be erased or altered. Invisibility of watermark refers to the ability to maintain the perception of the original video quality after the video is embedded .

Video watermarking in this final project using a .mp4 format video as the host media. The images that will be embedded are two different bitmap images. Host video frames are divided into two equal lots, where the frame 1 to $n_{\text{frame}}/2$ are embedded by watermark image 1 and $(n_{\text{frame}}/2) + 1$ until the last frame are embedded by watermark image 2. The methods which is used are DTCWT and SVD. The two watermarks are embedded and extracted in each subband at a depth level 1 to level 4 DTCWT - SVD with the aim for seeking the best subband and the best level for embedding and extracting. In the extraction testing, watermarked video is given several attacks before extraction process.

The greater the level of embedding, the size of embedded image will be smaller so the size of the watermarked video is also getting smaller. The best DTCWT level to embed the watermark image is level 4 with an average MOS score is 3,81 and the average value of PSNR is 41.2701 dB. The better subband for embedding are subband with three parts such as $\{1,5\}\{1,1\}\{1,2\}$ and $\{1,5\}\{1,2\}\{1,2\}$. Subband with three parts on each level can hide the watermark images without causing damage in host video. Based on the MOS value , the best extraction images are generated by the embedding at level 1 and level 2 with the average MOS value for the first extraction image is 4,61 and value for the second extraction image is 4,87. Although its MSE value is not the best , the extraction MOS value shows that the extracted images are have a perfect similarity with the watermark images.

Keywords : DTCWT, SVD, Video Watermarking