

ABSTRACT

The ease of obtaining and spreading information encourages copyright infringement. Watermarking is used to protect copyright and the authenticity of an image. Watermarking works by inserting certain information into the image called embedding. Embedded information can be detected later to prove the ownership of the image. Many watermarking methods have been proposed, but we need a method that is robust to attack and can restore the original image without any damage (reversible), especially for sensitive images.

This final project designs a watermarking system based on independent embedding domain methods which is robust and reversible scheme. There are two stages in the embedding process, i.e. the robust embedding stage and the reversible embedding stage. The watermarking process begins by dividing the image into two parts, i.e. low-pass and high-pass. Then, do two embedding stages on different embedding domains. The low-pass domain is used for robust-embedding and the high-pass domain is used for reversible embedding. Finally, to get a watermarked image, low-pass and high-pass are reconstructed by combining the two. Watermarking system is tested using various attacks to evaluate its performance.

The performance results of the independent embedding domain methods are obtained by testing before and after being given an attack. Testing without attack is done using watermarked image to determine the imperceptibility of the scheme. This scheme obtained a good PSNR with an average of $42.98dB$. In addition, this scheme also succeeded in recovering the host image and embedded watermark with inf PSNR of extraction and BER of 0%. Testing with attack get the best result with an average BER of 8% at around $34dB$ of PSNR.

Keywords: Watermarking, Robust Reversible Watermarking, Independent Embedding Domain Watermarking.