ABSTRACT

The purpose of watermarking method is to protect copyright from harmful things such as piracy, duplication, and others. CS (Compressive Sensing) replaces the general policy in data used for sampling based on Shannon's theory of traditional mehods. Using CS techniques, signals can be reconstructed using fewer samples than traditional methods. SS (Spread Spectrum) claims that can robust some attacks because it has spread on the watermark bit that make the original bits on the watermark image not to be attacked.

The process of embedding and extraction in this research was carried out on DWT (Discrete Wavelet Transform) and SS (Spread Spectrum). CS is used to eliminate inefficiencies when retrieving data by reducing the dimensions of a watermark image. DCT method is used for sparsity transform and then measured based on the Gaussian distribution. Then the watermark is placed on the host coefficient obtained from the DWT transformation results with the SS method. Based on the measurement results, the watermark image is reconstructed using BP in $l_{1-magic}$ package.

The results of this final project are watermark application in MATLAB. DWT-based CS using SS can increase robustness seen from the value of BER 0% using CS, and BER 19.63% without CS, with the PSNR value relatively the same because the watermark bit inserted repeatedly into the host image. In RGB color space has better PSNR value than YCbCr, but YCbCr is more robust to attacks.

Keywords: *Image Watermarking, Compressive Sensing, Basis Pursuit, Discrete Consine Transform, Discrete Wavelet Transform, Spread Spectrum.*