Abstract

Medical image in digital form has two major thing, they are origin authentication and integrity control. The ownership of medical image must be known correctly and the tampering of image must be detected. The solution from that problems is multiple watermarking. In this final project, the multiple watermark consists of signature watermark and reference watermark. Signature watermark is a text which defines the ownership of medical image. Whereas, reference watermark is an image which can detect possibly tampering on medical digital image.

The multiple watermarks are embedded in a wavelet domain by doing decomposition 2 levels and applying a proper quantization of coefficients. In accordance with strict limitations applying to medical images, the scheme allows the definition of a region of interest (ROI) whose diagnostic value is protected since the only additional information embedded therein aims at integrity control. The robustness of signature watermark is enhanced through a form of hybrid coding, which includes repetitive embedding of BCH encoded watermarks. The testing has done by giving some attack to watermarked image that is sharpening, white Gaussian noise and JPEG compression. Which will be analysis is quality of watermarked image, robustness of signature text watermark and fragility of reference image watermark.

The result of the testing are multiple watermarking technique shows good performance in term of imperceptibility. Sharpening is hard attack where using hybrid coding incapable enhance robustness of signature watermark toward this attack. For noise and JPEG compression, using hybrid coding show good performance through robustness enhancement after attack level reach certain degree. Meanwhile the reference watermark has high fragility and capable to detect the tampering although that tampering is very small.

Keyword : multiple watermarking, wavelet decomposition, repetitive BCH encoding