

Abstract

Protection of digital medical image can be performed by embedding watermark on it. There are two watermarks that should be embedded, namely signature watermark and reference watermark. Winanjuar et al, proposed a multiple watermarking scheme based on DWT, HBC, and Reed-Muller Code as a solution to protect digital medical image. That scheme shows a good performance.

However, the embedding with that scheme is performed on static ROI and RONI. Besides, that scheme has a potential to lose information during the embedding.

Therefore, a new scheme using IWT, Reed-Muller Code, and HBC is proposed. With the information loss caused by truncating floating point during the embedding can be avoided. In addition, this scheme meets a dynamic ROI and RONI.

Protection of digital medical image should cover two sensitive matters that belong to it. Image originality (integrity control) can be protected by embedding fragile reference watermark. Whereas, origin authentication can be protected by embedding robust signature watermark. Therefore, multiple watermarking system can be used to protect digital medical image.

This proposed scheme shows a good performance. A small scale of sharpening, blur, gaussian noise, and also JPEG compression attack has already been able to cause a damage of reference watermark. It means that the fragility of reference watermark shows a good performance, therefore integrity control can be well protected. Reed-Muller Code increases the robustness of signature watermark fairly enough, therefore origin authentication can be well protected.

Keyword : integer wavelet transform, reed-muller code, HBC, SHA-256