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# Hybrid Transform Based Reversible Watermarking Technique for Medical Images in Telemedicine Applications

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## ABSTRACT

In telemedicine, medical images are broadcast in a secured manner and received correctly without any loss. This paper proposes a novel reversible watermarking technique for medical images without any additional key information. In traditional transform based watermarking method, the embedding capacity is less also requires additional key information for lossless recovery of the original image at the extraction side. This paper overcomes that difficulty in transform domain by using a novel hybrid reversible watermarking algorithm to increase the embedding capacity. Integer wavelet transform (IWT) and Discrete Gould transform (DGT) are used to develop a secure and reversible medical image watermarking. At the sender side, watermark information is embedded within a wavelet sub band using DGT and at the receiver side, the embedded watermark is extracted and exact original medical image is reconstructed without any additional information. Experimental results for medical images and ordinary images show that the proposed method meets out the requirements of the image watermarking system such as imperceptibility, capacity, reversibility and robustness. The output of the proposed method is superior to the existing methods.

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