

## Robust Medical Image Watermarking Using Frequency Domain and Least Significant Bits Algorithms

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**Abstract :** Watermarking and stenography are getting importance recently because of copyright protection and authentication. In watermarking we embed stamp, logo, noise or image to multimedia elements such as image, video, audio, animation and text. There are several works have been done in watermarking for different purposes. In this research work, we used watermarking techniques to embed patient information into the medical magnetic resonance (MR) images. There are two methods have been used; frequency domain (Digital Wavelet Transform-DWT, Digital Cosine Transform-DCT, and Digital Fourier Transform-DFT) and spatial domain (Least Significant Bits-LSB) domain. Experimental results show that embedding in frequency domains resist against one type of attacks, and embedding in spatial domain is resist against another group of attacks. Peak Signal Noise Ratio (PSNR) and Similarity Ratio (SR) values are two measurement values for testing. These two values give very promising result for information hiding in medical MR images.

**Keywords :** watermarking, medical image, frequency domain, least significant bits, security

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