International Journal of Applied Engineering Research

Hybrid Watermarking approach using Transform Techniques

[1]Maruturi Haribabu, [2]Ch. Hima Bindu, [3]K. C. Kullayappa Naik, [4]Velmathi Guruviah
[1]Assistant Professor, [2]Professor, [3]Associate Professor, [4]Professor
[1,2,3]Department of ECE, QIS College of Engineering & Technology,
Ongole, Andhra Pradesh, India.
[4]Professor, School of Electronics Engineering, Vellore Institute of technology, Chennai 600127, Tamilnadu, India.
haribabu.maruturi@gmail.com , hb.muvvala@gmail.com, kcknaik@gmail.com ,
velmathi.g@vit.ac.in

ABSTARCT:

Digital media, such as audio, video, voice, and pictures, are becoming more important with the rise and introduction of Internet dispatches and multimedia technologies. Actually, an efficient solution to this issue may be found in watermarking trends. Nonetheless, for successful watermarking of data, it is necessary to fulfill a number of critical characteristics, including transparency, low computing cost, resilience, and security. In this paper, the Hadamard Transform (HT) and singular value decomposition (SVD) form the basis of a robust hybridized strategy to watermarking medical pictures. The (SVD) method resulted in changes to both the host picture and the watermarked image, both of which had single values applied to them. Simulation findings show that the proposed watermarking frame is reliable and can provide better results. .

Keywords- Security, HT, SVD.

I. INTRODUCTION

The Digital image watermarking describes the practice of embedding text or other information into a picture. With the advancement of computer, network, and multimedia technologies, it is now easier than ever to share data visually. Digital Image Watermarking techniques primarily serve to secure intellectual property, increase effectiveness, and verify authenticity. Challenges in protecting the intellectual property of images have arisen as a result of complications during their transmission as images. Scientists and researchers have devised a method to bed information into images so that their source of power can be identified. Digital image watermarking has been proposed to describe this method. The watermark embedding module and the watermark birth and discovery module are the two main components of a watermarking system. Based on how they are perceived by humans, watermarks come in four distinct varieties: (1) the

visible, (2) the invisible (but still secure), (3) the invisible (but still vulnerable), and (4) the binary. Both the distinguishable watermark and the imperceptible watermark are considered to be watermarks.

Fourier Transforms (FFT, DFT, and WFT), Discrete Cosine Transforms (DCT), Walsh-Hadamard Transforms (WHT), and Wavelet Transforms (WFT) are just some of the most common transformations used in the frequency domain. As more transformations are applied to digital watermarking algorithms, their efficiency improves. This means that the benefits of using both types of transformations to create algorithms cancel out the drawbacks of using either one alone. An attempt is made in this paper to use both the discrete wavelet transform (DWT) and the fast Fourier transform (FWHT) to embed a watermark in the cover image and then extract that watermark using only the cover image. Each sub-band (LL, LH, HL, and HH) of the DWT transformation is responsible for transporting the watermark image, and their corresponding correlation and peak-to-average signal-to-noise ratio values are reported. Once a suitable sub-band of the DWT transformation is determined for bedding the watermark image, the method of concealing the image in each sub-band is complete..

II. RESEARCH ELABORATION

In this research, we offer a powerful eyeless symmetric picture watermarking method based on SVD and HT. At first, the watermark picture was muddled using Gaussian mapping to prevent prying eyes. When used to legal documents, watermarks serve two purposes: they conceal sensitive information and they prove the document is legitimate. To further discourage forgery, you may watermark paper currency, because we need to do something about this issue.

ALGORITHM:

Algorithms 1 and 2 detail the actions used throughout the watermark embedding and extraction processes, respectively.

Algorithm1 Incorporating a Watermark

- Start
  - First, take a look at the cover.
  - Second, decipher the watermark.
  - Image resizing is the third step.
  - Step 4: Use DWT transfigure to decompose the cover picture into four bands, such as LL, HL, LH, and HH.
  - The fifth step is to use DWT once again, this time on the HL sub band, to get the LL1, HL1, LH1, and HH1 sub bands.

- Use SVD on watermark image to obtain three images, such as U, V, and D.
- Perform watermarking operation in each band and diagonal of SVD image with scaling factor.
- Apply IDWT, to obtain watermarked image.

➢ Stop

Algorithm2 Watermark Extraction

➢ Start

- First, take a look at the cover.
- Second, decipher the watermarked.
- Step 4: Use DWT transfigure to decompose the watermarked picture into four bands, such as LL, HL, LH, and HH.
- The fifth step is to use DWT once again, this time on the HL sub band, to get the LL1, HL1, LH1, and HH1 sub bands.
- Use SVD cover image to obtain three images, such as U, V, and D.
- Perform extraction operation with scaling factor, apply IDWT, to obtain watermark image.

➢ Stop

III. RESULTS

The first involved in my image fusion process is to read the image since we are using the MATLABTOOL we need to create a path for these images. This image we are reading first selecting image as shown in the figure.

(a1) (b1) (c1) (d1)

TABLE I. COMPARISION OF QUALITY MEASURES IN TERMS OF PSNR, MSE, RMSE, NCC & SSIM BASED ON WATERMARK VIT IMAGE

Images	**PSNR**		**MSE**		**RMSE**		**NCC**		**SSIM**	
	Existing ref [14]	**Methodology**	Existing ref[14]	**Methodology**	Existing ref[14]	**Methodology**	Existing ref[14]	**Methodology**	Existing ref[14]	**Methodology**
Image (a1)	57.0678	**68.7431**	0.0713	**0.0023**	0.7432	**0.0230**	0.9650	**1.0000**	0.8357	**1.0000**

IV. CONCLUSION

The suggested watermarking system employing HT and SVD was able to effectively meet both the imperceptibility and robustness criteria without sacrificing the transparency of the original. The experimental results suggest that this hybrid approach may be useful for protecting the intellectual property of medical images. However, further research is needed to enhance the bio metric security feature, prevent noise assaults, and maximize transparency to ensure the watermark's authenticity.

AKNOWLEDGMENT

The authors want to extend thanks to the QISCET management.

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