Improved security system for ATM using finger print identity

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Abstract *—Today security of data is a major issue .This paper proposes a simple method using DWT for fingerprinting digital images. Algorithm presented locates regions that are insensitive to human vision so that presence of embedded identification code is fully concealed from the human eye. Frequency domain technique adopted improves the robustness of the scheme. The fingerprinting information is hidden to enable reliable detection even if the image is subjected to cropping or editing. As the fingerprint of every person is unique and cannot change by anyone, this biometric feature is used over the others. This system achieves high image quality in terms of MSE and PSNR.*

Keywords - *image watermarking, embedding, extraction, application of method.*

I. INTRODUCTION

Digital watermarking is the act of hiding a message related to a digital signal. The process can be either visible or invisible. Visible watermarking declares some information regarding the ownership or displays a logo. Whereas invisible watermarks remain concealed from the human visibility and yields the hidden contents whenever an extraction process is carried out to discover the whereabouts of true owner of the resource.

Digital fingerprinting is one of the applications of watermarking. In digital fingerprinting the unique information assigned to identify the owner is embedded into the multimedia content. Fingerprints are unique to the owner of the in nature and hence different copies of an image carry different fingerprint depending upon the custodian.

Based on the technique used for embedding the image digital watermarking can be classified into spatial domain methods and frequency domain methods. The frequency domain methods are more popular because watermark embedding is very robust in this domain as compared to spatial domain. It provides more security and imperceptibility.

II. LITERATURE REVIEW

In this section, we briefly review some of the works in the area watermarking method.

The scheme presented in [1] ensures the security against the image processing attack. In this algorithm MSB of the secret image embedded in to LSB of cover image. In this n LSB of cover image from a byte is replaced by n MSB of secret image. The quality of the image can be greatly improved with low extra computational complexity.

Another coding technique presented in [2], data inserted in images by simple MSB substitution. The method uses of most significant bit (MSB) algorithms for hiding data into digital images. The password is used for purpose of secret for encryption and decryption. The only authorized users can hide and disclose the message.

The decomposition technique presented in [3], first decomposes an image into sub blocks and then the resulting image is compared with a PSNR and MSE value

III. PROPOSED TECHNIQUE

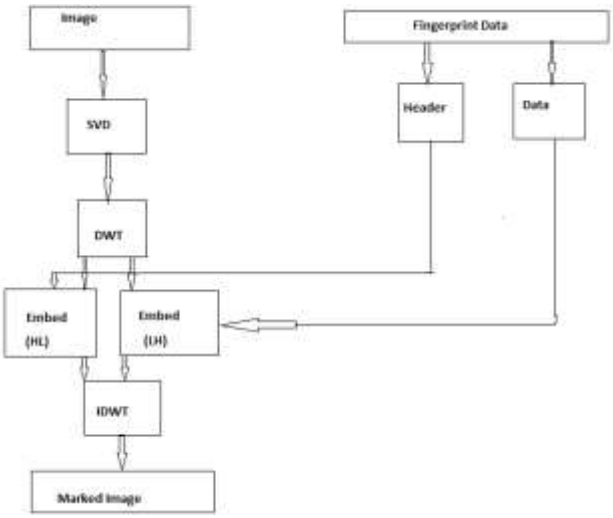


Fig.1 Embedding Process

The proposed technique combines embedding and extraction process.

A. Embedding Algorithm

Algorithm used to embed data into the cover image:

1: Select the cover image.
2: Fingerprint image is the secret data which is to hidden in the cover image.
3: SIRD is used to detect the eligible regions for watermarking.
4: DWT is applied to the image which divides in to frequency bands.
5: HL and LH bands are considered here for embedding.
6: IDWT is applied to regain the information.
7: Image is watermarked.

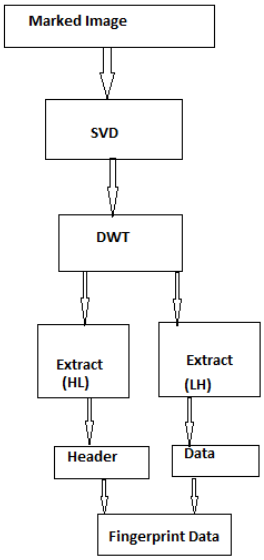


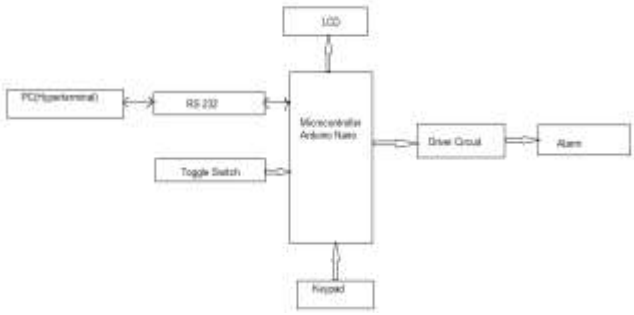
Fig.2 Extraction Process

B. Extraction Algorithm

Algorithm used to extract secret data from watermarked image:

1: Select the watermarked image.
2: Apply SVD to the image.
3: Perform DWT to divide in to frequency band.
4: Select HL and LH band.
5: Display the extracted image.

C. Hardware Design



IV. RESULTS

The embedding kit with Arduino microcontroller is used to implement the system in hardware. Programming is done with the help of MATLAB software. The results are given below.

Fig.3. Embedding Image

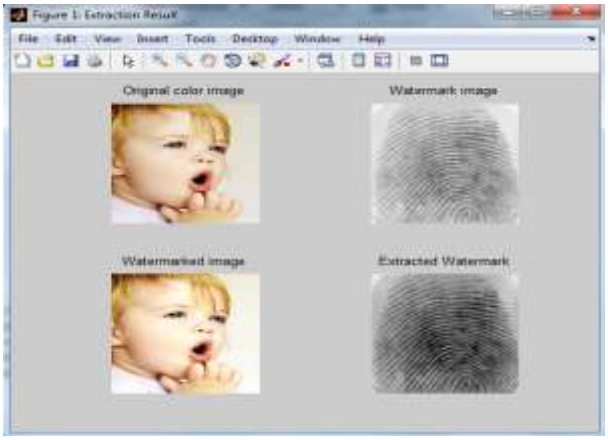


Fig.4 Extracted Image

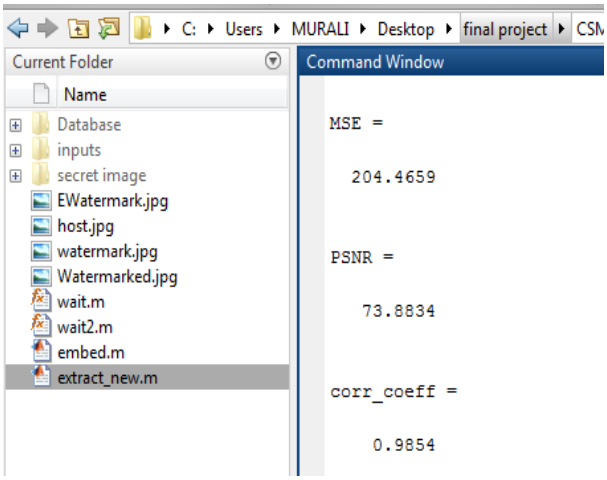


Fig.7 Calculations

IV. CONCLUSIONS

The proposed method results in better image quality without degradation. It is more secure and reliable since finger printing is used. In this proposed algorithm the watermark image is embedding in cover image using DWT algorithm. The PSNR and MSE values of proposed technique are better than other watermarking methods. The method is applied in ATM and voting system .It is implemented in hardware.

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