Video Watermarking using Content Aware Double-sided Embedding Error Diffusion

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Abstract- **Basically in watermarking, a message is embedded into another message. After embedding a new message is generated that is called as a stego message. In this work, we expect watermark decoding performance with specific content of the cover video and watermark, different noise tolerance abilities of various cover video content. This paper proposes CaDEED with expectation constraint (CaDEED-EC) and CaDEED-NVF&IF (CaDEED-N&I). CaDEED-EC considered the expected performances only. CaDEED-N&I exploited more by adopting the noise visibility function and proposing the importance factor (IF) for different watermark pixels. In the experiments, the validation tests for CaDEED-EC and CaDEED-N&I are proposed. The selection of optimal local region sizes for CaDEED-N&I is proposed. The performances can be measured by PSNR, SSIM, CDR measurements, NTPSNR and CB-CDR.**

Index Terms- **Halftone visual watermarking, Noise tolerance ability, Optimization, Watermarking.**

I. INTRODUCTION

Now the internet paved everywhere and data, music, multimedia content, video etc. are exchanged greatly through this internet. Recently, due to fast speed internet, a digital video is widely multimedia data exchanged through internet. To improve security of multimedia content, the advanced protection must be given [4]. In the security research area, the 2D Barcode with a digital watermarking is very popular. In this project we proposed a video watermarking with text data (verification message) by using the Quick Response (QR) code technique. The QR Code is prepared to be watermarked via a robust video watermarking scheme based on the SVD and DWT [5]. A watermarking can give the authorized ownership of video document. This proposed work comprised of two processes, I] embedding where original video is watermarked with verification message and II] extracting process where embedded logo and verification is retrieved from the watermarked video.

II. LITERATURE REVIEW

In the paper [1], authors proposed progressive delicate watermarking plan dependent on people in general key watermark by Wong. The proposed technique takes out the vulnerabilities of the first plan to VQ duplicating assault of Holliman and Memon. As the assault exertion is ventured up by utilizing bigger picture squares and bigger picture databases for the age of fake pictures, the various leveled plot smoothly forfeits alter confinement precision while as yet distinguishing imitations.

In this paper [2], the exploration displays an upgraded technique, for example, Digital picture watermarking dependent on Blind Gain control alter identification (BFCT) calculation which joins watermarking and Stenography strategies to tackle the issue of fabrication recognition applications. In the BFCT display, a portion of the new preparing highlights will be chosen utilizing the learning presently held by the framework. At that point, particular highlights will be separated from chosen preparing picture highlights. The proposed philosophies execution is dissected with genuine picture databases those are downloaded from picture database archive. The qualities are contrasted and a few obliges, for example, number of measurements versus target, PSNR and BER. In light of the outcomes produced this examination presumes that precision expands contrasted with the past technique for Contourlet Domain calculation.

In the paper [3], the proposed spot dissemination uses the focal points from both arranged dithering and dab

dispersion for an awesome visual quality and high preparing proficiency. Also, the proposed strategy upgrades the spatial relationship among the handling orders in CT to fundamentally enhance the homogeneity and smoothness of halftones. In particular, an elective methodology on APSD computation as inverse to the average Bartlett's system is proposed to effectively mirror the property of halftone designs. This methodology is a decent device to feature the occasional ancient rarity of the halftone designs. As archived in the test results, the proposed spot dispersion is generously better than the previous dab dissemination and requested dithering as far as visual quality. In spite of the fact that the runtime of the proposed technique is somewhat slower than that of the cutting edge OD, the proposed strategy with ancient rarity free property offers an extraordinary market potential. As opposed to those techniques which don't offer parallelism property, the proposed strategy takes care of the demand of the handy ventures. Especially, the expanding on picture goals requires exceptionally proficient preparing and mass profitability. The proposed plan can be a decent possibility to address these issues.

In this paper [4], the Ordered Dither Block Truncation Coding is proposed to take care of the issue of blocking impact intrinsic in BTC that causes serious perceptual relic in high pressure proportion applications. The Look up Table based dither exhibit approach is proposed to altogether decrease the many-sided quality in square truncation coding and improve the productivity of subjected CBIR frameworks. The proposed plan is an extremely focused methodology for picture recovery application that utilization packed pictures. The powerful age of picture content descriptors utilizing the dither based BTC from compacted pictures is a shelter to CBIR frameworks cooking huge database of packed pictures. The void and bunch half toning joined with BTC enhances the picture quality while worked in high coding addition applications like CBIR frameworks.

In this paper [5], the proposed watermarking plan limit is high. It inserts all validation information everywhere throughout the picture, in any case locale of-intrigue (ROI) or area of-non-intrigue (RONI). This is to ensure all information has validation bits and recuperation bits on the off chance that one of the zone is assaulted or changed. The object is to

guarantee limitation works at all information, as the delicacy reason for existing isn't to secure the information like strong watermarking, yet to be caution with the adjusted area in the picture. The Hilbert numbering techniques demonstrates that it is perfect to different kinds of pictures, shading and dim scale.

III. PROBLEM STATEMENT

To propose the system to provide potential solution for protection and prohibiting copyright infringement of multimedia using video watermarks. The proposed system can withstand against various attacks. It improves the performance in protection of copyright and authentication.

IV. SYSTEM ARCHITECTURE

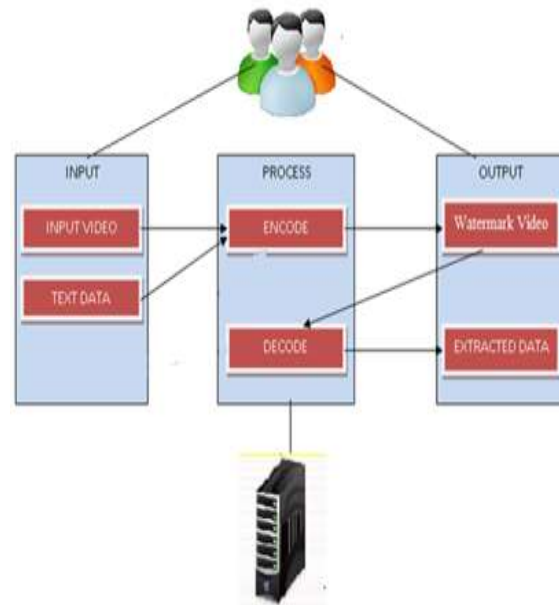The architectural diagram of the system is shown in Fig. 1.

Fig. 1 System architecture

Here, the user provides input video file, text data and security key for hiding data into Video. The system collects the required input from user and encodes the data into video and generates a watermarked video similar to input Video. When user wants to decode it then user needs to provide watermark video file and security key which are already used for encoding process. System validates watermark video and security key of user and decodes the message from

the video which is called as extracted data from the video. Thus it provides more security.

V. MATHEMATICAL MODEL

The mathematical equations are given below. A Venn diagram is shown in Fig. 2.

S= {I, P, O}

I= Input, P=Process, O= Output

I {I0, I1, I2,I3}

I0= Provide logo to embed

I1= Provide video in .mpeg format

I2 = Provide text to be hide in video

I3 = Provide encryption key K_{128}

P {P0, P1, P2, P3, P4, P5}

P0 = Encrypt the text using AES algorithm

P1 = Create QR code of encrypted text {P0..Pn}

P2 = Extract frame from video {f0...fn}

P3 = Find I frame to embed logo

P4 = Hide data in I frame

P5 = Extract logo and text from video

O= {O0, O1}

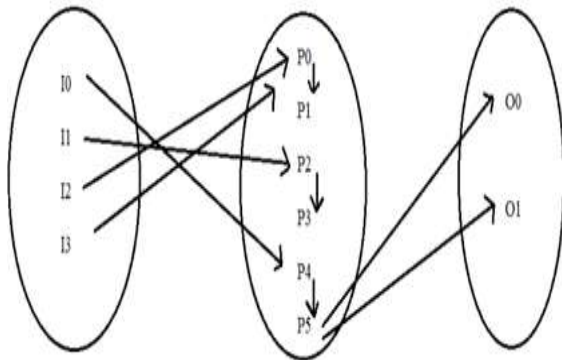O0 = Secure text message (m)

O1= logo hidden in video (l)

Fig. 2 A Venn diagram

VI. SYSTEM REQUIREMENT

The system requirement includes hardware and software part. The hardware and software resources are listed below.

I] Hardware Resources

1. System: Pentium IV 2.4 GHz

2. Hard Disk: 40 GB

3. Floppy Drive: 1.44 Mb

II] Software Resources

1. Operating System: Windows 7 and above

2. Programming Language: Java

3. IDE: Net Beans

VII. CONCLUSION

The proposed method is convenient, feasible and practically used for providing copyright protection. This method can achieve the reliable and secure watermarking. The dual process can give two authentication details. This method is feasible for providing copyright protection. The proposed method can achieve acceptable certain robustness to video processing.

VIII. ACKNOWLEDGMENT

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