

Digital Watermarking Technique using Robust Quantization Index Regulation (RQIR)

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Abstract

Digital watermarking is one of the efficient technique that is used in the current technological systems to support and provide the copyright notices, authorization, secret correspondence and cross breed transmission applications, for example, computerized sound television are samples of developing sight and sound applications for computerized watermarking and data implanting systems, techniques for installing one signal, We represent a unique digital modeling technique called Robust Quantization index regulations (RQIR) that accomplish provably great rate-twisting strength execution. These strategies, and low-multifaceted nature acknowledge of them called dither tweak, are provably superior to both a while ago proposed straight routines for spread range and nonlinear techniques for low-bit(s) balance against square-slip twisting compelled purposeful assaults. At long last, we report reenactment comes about that show the execution of dither balance acknowledge that can be executed with just a couple of adders and scalar quantizes.

Index Terms: Digital Watermarking, Robust Quantization Index Regulations(RQIR), Dither Balance.

I. INTRODUCTION

Digital watermarking and information embedding systems have a number of important multimedia applications. These systems embed one signal, sometimes called an “embedded signal” or “watermark”, within another signal, called A “host signal”. The embedding must be done such that the embedded signal causes no serious degradation to its host. At the same time, the embedding must be robust to common degradations to the composite host and watermark signal, which in some applications result from deliberate attacks. Ideally, whenever the host signal survives these degradations, the watermark also survives. One ordinarily referred to application is copyright notice and implementation for sight and sound substance, for example, sound, feature, and pictures that are appropriated in computerized arrangements.

Case in point, watermarking procedures have been proposed for authorizing duplicate once offers in advanced feature circle recorders Authentication of, or detection of tampering with, multimedia signals is another application of digital watermarking methods, as is covert communication, sometimes called “steganography” or low probability of detection communication.

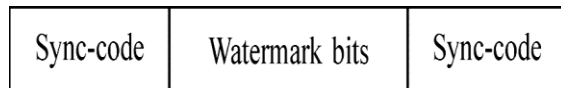


Fig 1: Data Structure

Although not yet widely recognized as such, hybrid transmission is yet another group of information embedding applications. In these cases the host signal and embedded signal are two different signals that are transmitted simultaneously over the same channel in the same band with. Alleged crossover in-band on-channel advanced sound television (DAB) is an illustration of such a mixed media application where one may utilize data installing strategies to regressively perfectly update the current business show radio framework. In this application one might want to all the while transmit an advanced sign with existing simple (AM and/or FM) business show radio without meddling with ordinary simple gathering. Thus, the analog signal is the host signal and the digital signal is the watermark. Since the embedding does not degrade the host signal too much, conventional analog receivers can demodulate the analog host signal. In addition, next-generation digital receivers can decode the digital signal embedded within the analog signal. This embedded digital signal may be all or part of a digital audio signal, an enhancement signal used to refine the analog signal, or supplemental information such as station identification. All the more for the most part, the host motion in these half and half transmission frameworks could be some other sort of simple flag, for example, feature or even an advanced waveform.

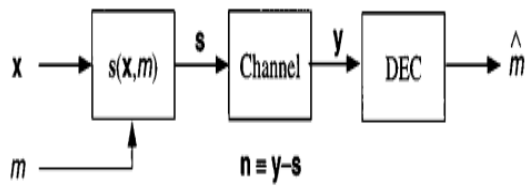


Fig 2:- General Information- Embedding Problem model

II. DIGITAL WATERMARKING

A picture is a two-dimensional picture, which has a comparable appearance to some subject normally a physical article or an individual. Picture is two-dimensional, for example, a photo, screen show, and additionally a three-dimensional, for example, a statue. They might be caught by optical gadgets, for example, cams, mirrors, lenses, telescopes, magnifying instruments, and so on and common items and phenomena, for example, the human eye or water surfaces. The word picture is additionally utilized as a part of the more extensive feeling of any two-dimensional figure, for example, a guide, a diagram, a pie outline, or an unique painting. In this more extensive sense, pictures can likewise be rendered physically, for example, by drawing, painting, cutting, rendered naturally by printing or machine design innovation, or created by a blend of strategies, particularly in a pseudo-photo.

A picture is a rectangular framework of pixels. It has a positive stature and an unequivocal width checked in pixels. Every pixel is square and has a settled size on a given presentation. However distinctive machine screens may utilize diverse measured pixels. The pixels that constitute a picture will be requested as a matrix (segments and columns); every pixel comprises of numbers speaking to sizes of shine and shade. Every pixel has a shade. The shade is a 32-bit whole number. The initial eight bits focus the redness of the pixel, the following eight bits the greenness, the following eight bits the blueness, and the staying eight bits the straightforwardness of the pixel. Instead of the raster picture designs above (where the information depicts the attributes of every individual pixel), vector picture arrangements contain a geometric depiction which can be rendered easily at any sought showcase size. Sooner or later, all vector illustrations must be rasterized with a specific end goal to be shown on advanced screens. Then again, vector pictures can be shown with simple CRT engineering for example, that utilized as a part of some electronic test gear, therapeutic screens, radar shows, laser shows and early feature amusements. Plotters are printers that utilization vector information instead of pixel information to draw design

III. ROBUST QUANTIZATION INDEX REGULATION (RQIR)

Formally, a cross section is a discrete subgroup of Euclidean space, expected to contain the cause. That is, a cross section is shut under expansion and inverses, and each pointhas an area in which it is the main cross section point. More often than not, a grid in R^n is meant as Λ and characterized as the subgroup where a^1, \dots, a^n are subjective whole numbers. Furthermore v^1, \dots, v^n are straightly autonomous vectors in n-dimensional genuine Euclidean space R^n . The vectors v^1, v^2, \dots, v^n are then called a premise for the grid. Let the directions of the premise vectors be the purposes of the Voronoi cells whose separation from P is a nearby greatest are called openings in P. The focuses whose separation from P is an outright greatest are called profound gaps in P. Their separation from P is the covering sweep

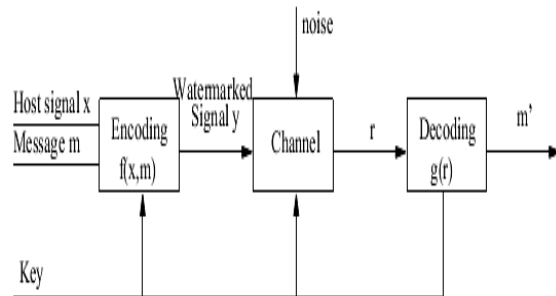


Fig 3. RQIR Based Watermarking System

The watermarking scheme can be implemented in thespatial domain, frequency domain or wavelet domain. The simulation in this paper is done in the spatial domainAWGN channel and aims to compare the D2 £ D2 £D2 £ D2and E8lattice quantization properties. The watermarking information is added to the pixel data inthe cover image, and it is encoded. Let $I_{m;n}$ represent a pixel at coordinate (m,n) inthe original cover image, and $I'_{m;n}$ represent a pixel atcoordinate (m,n) in the watermarked image. First wedefine Peak Signal to Noise Ratio(PSNR) as

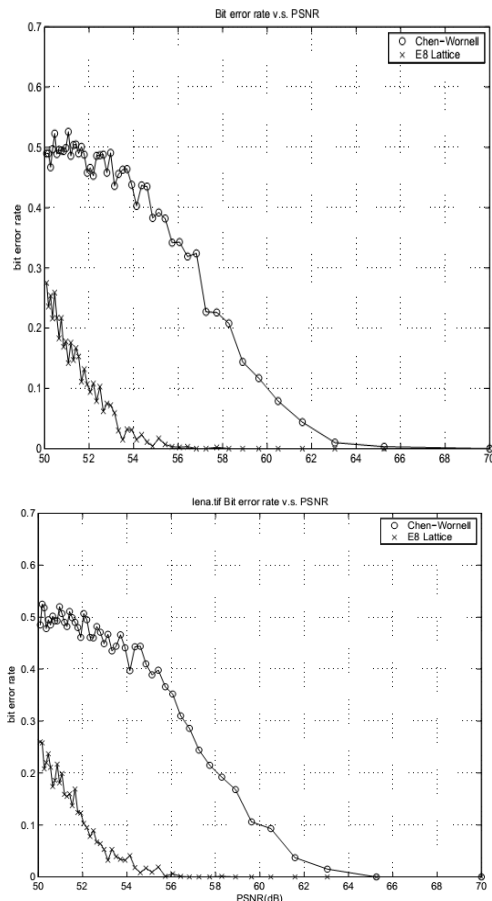
$$PSNR = \frac{MN \max_{m,n} I_{m,n}^2}{\sum_{m,n} (I_{m,n} - \bar{I}_{m,n})^2}$$

In a channel with additive Gaussian noise of zero mean and variance $\frac{3}{42}$ channel,

IV. EXPERIMENTAL RESULT

This condition is fulfilled in no less than three essential cases the instance of a Gaussian host signal and an added Substance Gaussian commotion channel the case of a Gaussian host flag and

discretionary square-wave twisting compelled assaults and the instance of self-assertive square-blunder bending obliged assaults, a zero-mean, limited fluctuation host flag whose probability thickness capacity is limited and consistent, and asymptotically little inserting incited distortions also channel irritation.



V. CONCLUSION

Computerized watermarking is one of the effective procedure that is utilized as a part of the momentum innovative frameworks to help and give the copyright notices, approval, mystery correspondence and cross breed transmission applications, for instance, automated sound TV are examples of creating sight and sound applications for electronic watermarking and information embedding frameworks, systems for introducing one sign. We speak to an extraordinary advanced demonstrating method called Robust Quantization list regulations (RQIR) that achieve provably incredible rate-winding quality execution. These methods, and low-multifaceted nature recognize of them called dither change, are provably better than both a while prior proposed straight schedules for spread extent and nonlinear strategies for low-bit(s) parity against square-slip turning forced deliberate ambushes. Finally, we report reenactment occurs that

demonstrate the execution of dither equalization recognize that can be executed with simply a few adders and scalar quantizes.

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