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Watermarking for Digital Images with Wavelet: A Survey

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Abstract

Present we are in the era of digital management. We are making the things in the digital form without any need of paper and also different benefits such as easy to share, increasing the life time of the document in the digital manner compared to paper manner. But making the things in the digitalized manner the things are easily get copied, modified, redistributed and also violating the copyright of the documents from buyers, customers, distributors, owners and authors. So to have the authenticity of the document the watermarking mechanism was introduced. So the documents which were shared the proper watermarking with their logo or name will be issued by the concerned authority people. For watermarking purpose various algorithms were developed. So here the various methods, stimulation techniques, problems and future works in this domain were discussed.

Keywords: Watermarking, Distributor, Producer, Consumer, Owner, Digitalization.

Introduction

Many of the researchers were working towards this concept to overcome the problem of misusing the digital documents without the prior permissions of the user or owner. This problem was partially solved by taking the mechanism [1] of grid system. By using the mechanism of grid system the complex problem was break over into the several simple tasks. By performing this method we can observe the improvement in terms of flexibility and also security.

As coming to the classification of watermarking it is divided into two categories namely Blind and non-blind classification. While performing the categorization whenever the image was inserted or uploaded then the required classification method can be chosen. There are some of the classification mechanism such as discrete cosine [2] transform (DCT), DFT and DWT. Each type of classification mechanism having the unique style in processing the document.

Literature Work

Here in this literature work we are going to focus on the various mechanisms were used in the development of the work. Here even though there are many mechanisms for securing the

digital images but only the few techniques became popular due to its advancements in development and continuous research in this work. [3] They are DWT, DST and BSVD mechanisms respectively.

DWT

This mechanism is used in signal processing mechanism. [4] This mechanism is used in multi images for propagation. Here the structure as well as the logatheramatic of the data was identified. This mechanism was implemented using multi step propaganda. Whatever the image was given as input the particular image was divided into the multiple numbers of sub-divisions. We can apply this mechanism in left axis and right axis variables of (x,y).

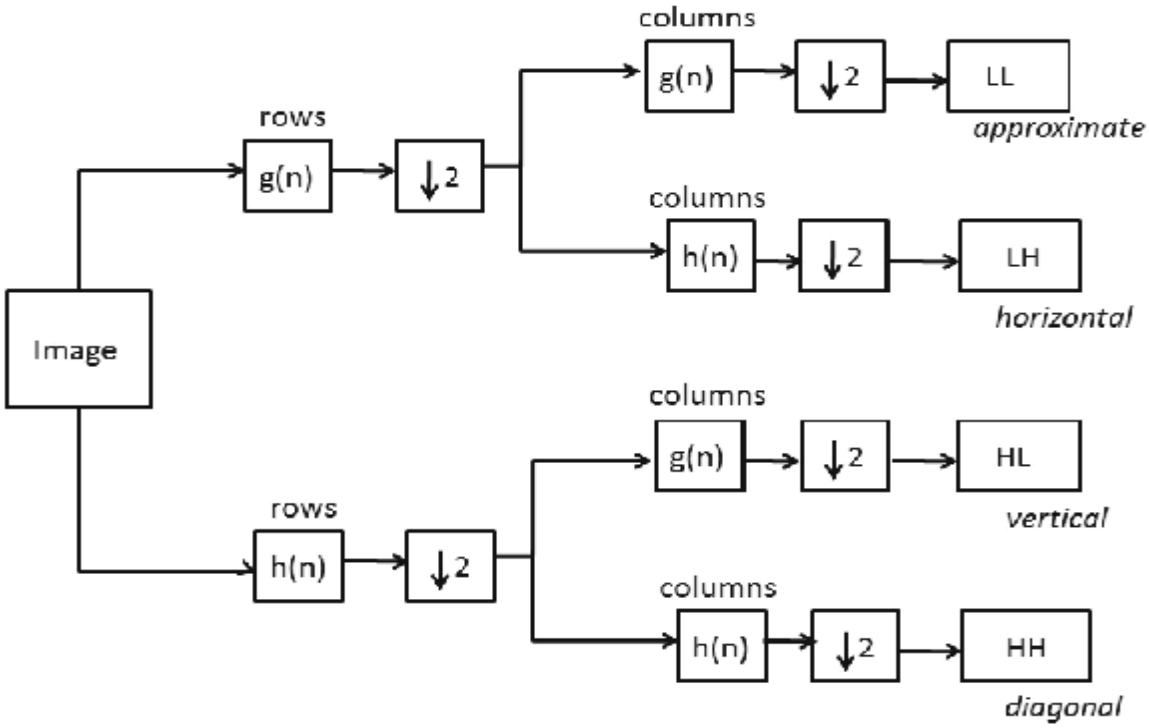

Figure 1.level of Decomposition

DST

Here this mechanism combines the classical and the cluster mechanism for the analysis of the directional flow by the clustering mechanism. Here the structure [5] is developed in the form of the pyramid structure and the waves are transferred through those waves. Not like other pyramids these pyramids were well established and well structured because of the accurate results and best performance. Here we are using multi dimensional mechanism so that the structure and the functionality of the resultant data are not going to change. Here the values were also generated by passing the various parameters.

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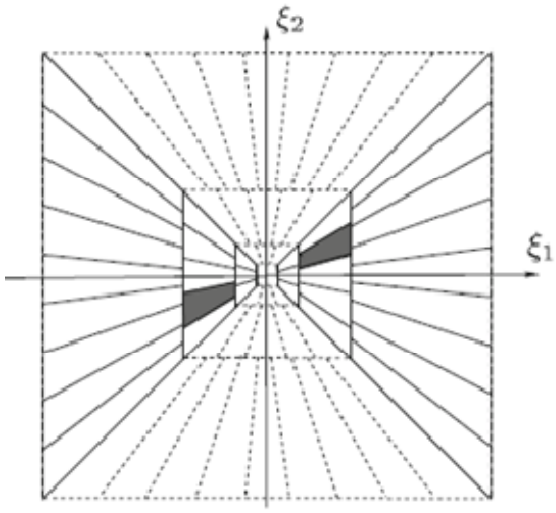

Figure 2.DST mechanism with two variables

The above figure 2 represents the how the tilting of the light is processing with the two light rays of R1 and R2. Here the data is passed by the low pass band filters. These band filters will help for transferring the data in the multi-dimensional environment. [6] This is the procedure moves on until the data is divided into multiple parts of sub-divisions. [7]

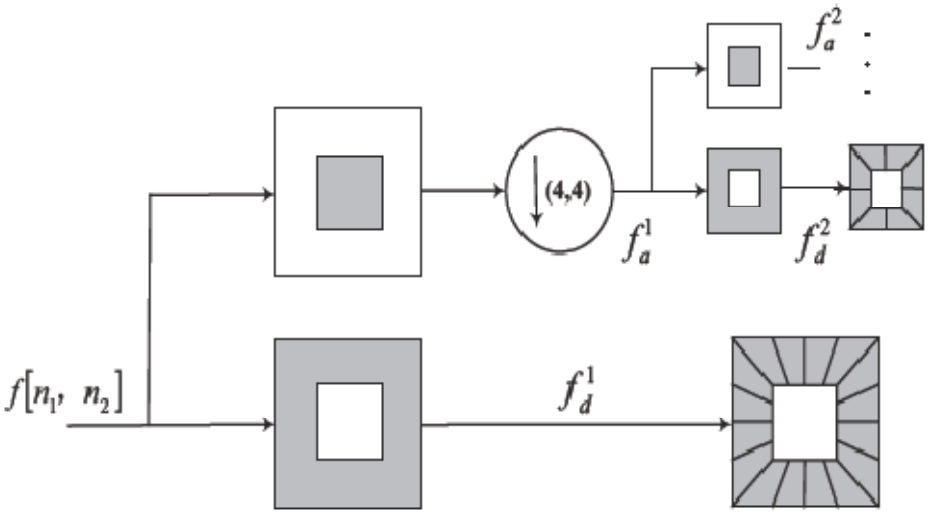

Figure 3.Decomposition working model

BSVD

This is a matrix mechanism for making the different image processing techniques such as image compression, image regression, removing noise in images. [8] This mechanism is a very complex mechanism which needs more amount of CPU resources as well as computation time for processing the task epically for hybrid data or images. [9] The working mechanism for the BSVD and SVD were quiet different in terms of complexity, time taken for processing and so...on., here BSVD decomposition process is conducted based on SVD. The main variation among BSVD and SVD classification is singular value calculation. [10]

In terms of performance and number of keys generation BSVD classification is better than SVD classification. Here BSVD generates 4 keys where as SVD generates 2 keys.

Research going on in this Domain

Present there are many mechanisms are going on in the development of the task. [11] To make the data secure without any duplication of the data watermarking was introduced. [12] So to make more secure many of the algorithms were developed. Few of them were:

1. Watermark embedding algorithm.
2. Watermark extraction algorithm.
3. Digital signature algorithm.
4. Semi framework watermarking algorithm.
5. Sort and Task scheduling algorithm.
6. ECC algorithm.
7. Global optimization algorithm.
8. Digital watermarking algorithm.
9. Intelligence optimization algorithm etc.,

Apart of these algorithms many of the algorithms were developed for making the secure [13] for our original data without any misuse such as intelligence optimization algorithm, [14] Swarm optimization algorithm, [15] Singular vector decomposition [16] etc.,

Future Research scope in this domain

The main problem in this concept is wavelet capture is very low and the direction flow of the wavelet cannot be identified. Present to overcome this problem the geometrical structures of the natural images were identified. The multi-scale mechanism is used in identifying the direction of the wavelets and the analysis flow of the waves was identified.

To overcome these problems many of the mechanisms or techniques were ongoing such as Genetic Algorithm (GA), Particular Swarm Optimization, Single Value decomposition (SVD), Transform Algorithm, Optimization Algorithm etc., were developing to overcome the challenges of the duplicating the watermarking.

Conclusion

Presently every document is getting digitalized as at the same time due to digitalization misusing of the documents and making the duplication of the digital images with the original files these are the several challenges were facing in present days to make the original data more secure. To overcome this issue of data duplication watermarking concept came into existence. So that by watermarking mechanism some extent of data misuse was reduced. Even some amount of misuse was reduced cannot able to fix many challenges due to digitalization. In this regard many of the algorithms were developed for providing privacy

and security to the data. To provide very more amount of confidentiality to the digital data security keys were introduced by embedding with various encrypted hash algorithms.

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