# Digital Video Watermarking Scheme for Ownership Protection

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***ABSTRACT:*** *Digital video watermarking is a technique developed to help in copyright protection of video files. Digital video files can be easily copied and shared among many people on the Internet. So, it's extremely necessary to protect the copyright and ownership right of the video files with the help of digital watermarking. In this paper, we are presenting the comparative study of different video watermarking techniques by analyzing their performances, time taken for watermarking, co-relation of the extracted watermark with the original one, and some other important factors.*

**Keywords:** Digital Watermarking, Video Watermarking Copyright Protection, Spatial domain, Frequency Domain

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## 1. Introduction

Digital video watermarking is a technique, which is developed to protect the video files from being copied by any unauthorized person. With the growth of Internet, the broadband communication connects the whole world together. Now a day's digital files and multimedia data can be shared very easily among people living in different parts of the world. These digital multimedia file do not suffer any quality losses due to copying. So it becomes extremely necessary to protect these files. Otherwise it'll be very difficult to recognize the actual owner of the video file due to the ease of reproduction and content modification of digital data. Digital video watermarking is the technique used for this purpose.

The process of video watermarking is found to be more difficult and time consuming than Image watermarking, because video files contains large amount of data as compared to the images. In this paper we've discussed and summarized the different techniques used for video watermarking.

## 2. Objective

The main objective of the proposed research work is to devise a robust compressed domain video watermarking scheme without much degrading the watermarked video frames. For robust and visually imperceptible watermarking scheme, embedding zone selection is an important issue. Since selection of embedding zone usually depends on spatial and temporal characteristics of the video sequence, efficient tracking of spatio-temporal distribution can be useful for efficient watermarking scheme. Intuitively, inter-frame correlation and homogenous motion are usually higher within a video shot rather than a GOP (Group of Pictures).

The specific objectives of the project are as follows:

1. Develop new watermarking algorithms that exploit the host signal features and explore new embedding domains. The proposed algorithms may be cast into the class of "generation" watermarking algorithms.

2. Propose a new robust perceptual hashing for video content identification. We are intending to target a number of applications such as video monitoring, multimedia browsing and indexing with a view to develop a prototype system.

3.Survey and investigation on multimedia security issues and multimedia watermarking scheme.

4. Compared and evaluate various watermarking scheme

5. A new approaches and procedures for multimedia security based on watermarking are proposed.

**3. Related Work**

There are three video watermarking technique already implemented.First one is the video watermarking technique, done using DWT transformation. In this method, watermark is inserted in the low level component (LL), which is got after the DWT decomposition of the video frame.

Second video watermarking scheme which we've selected is the DWT-SVD based technique [7]. In this paper, RGB video frame is first converted to Y,Cb,Cr format. Then Y (Luminous) component. It is first decomposed using DWT and after that LL part of the decomposition is gone through SVD (Singular Value Decomposition). The S portion of this decomposition is modified with the Sw component of watermark (got after the svd decomposition of the watermark image).

Third video watermarking technique [4] is 3 level DWT and SVD based technique. In this method blue channel of the RGBframe is gone through 3 level DWT and then LL3 part is decomposed using SVD. Then S part is modified using Sw part of the watermark. In this method, video is divided in different scenes and one frame to be watermarked, is selected from each scene. In this way many copies of the watermark is inserted in a single video. So this can be useful, while extracting the watermark from the video.

**4. Proposed Work**

In this paper we obtained some results with the help of some existing results that are as follows:

We used LSB algorithm to embed watermark in a video. A video is made of frames. First we extract a video into frames and embed a watermark in all frames and convert it into video as described in below algorithm.

**Algorithm:**

```
1. Extract the video into n frames.
2. for i = 1 to n
3. Do
4. Add watermark to frame i
5. end     //end of for loop
6.  for i = 1 to n
7. embed frame i to video
8. end
```

Once watermarking has been done one can also remove or change the watermark that we embedded into video. To avoid such action we added authentication by using a secured key which is private to the authorized person.

## 5. Conclusion

The concept of video watermarking is remarkable as it relates to image processing. We investigated some technique for video watermarking for large video.The extracting time of watermark is less as compared to already implemented work. The video watermarking scheme is better than when Frame Dropping attack is applied. In one frame from each scene is selected for watermarking, so it can easily withstand under frames dropping. While in case of only one frame of the video is watermarked so if watermarked frame is dropped while frames dropping attack, the watermarking scheme will fail.

## 6. Future Work

The video watermarking schemes mentioned in this paper are not perfect. In future, a watermarking scheme can befound which is robust under all the attacks like frame dropping etc, still the imperceptibility of the watermarked frame should not be compromised. Also the time complexity of the scheme should be reduced to some extent.

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