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# **A Survey on Video Watermarking Method for Reliability and Security in Video Using Least Significant Bit**

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*Abstract— Digital watermarking techniques have fastest growing techniques for copyright protection and authentication. Digital watermarking field has so many articles which covers innovative approach. Hence, watermarking is a solution for patent protection and content verification mechanisms. Watermarking is classified into three domain i.e. spatial, transform and wavelet. Today's media use watermarking techniques for various applications such as copyright protection, copy control and tamper recurrence. Main focus involved in watermarking approach is its design considerations, choice of suitable watermarking methodology, security, reliability and robustness. In this survey we have studied and analyze much number of techniques and methodologies where we found video watermarking interesting. In this digital world many revolution has taking place with the paradigm of multimedia distribution. Computer networks with High speed in World Wide Web have revolutionized. Distribution and production of High quality copies of digital data through the internet by exploiting recent network and software technologies. Video piracy has become an increasing problem particularly with the proliferation of media sharing through the advancement of Internet services and various technologies. Security techniques that are based on security techniques only provide assurances for data confidentiality, authenticity, and integrity during data transmission through a public channel. However, many security techniques do not provide protection against unauthorized copying or transmitting of illegal materials. Digital watermarking is the act of hiding a message related to digital signals in different forms like an image, song, video within the signal itself. Using digital watermarking, copyright information can be implanted into the multimedia data by using some algorithms. Watermark information is mainly for protecting the copyright, covert communication and data file authenticity. Existing video watermarking techniques are divided into different categories Spatial, Transform and Pixel as shown in Fig1.*

*Keywords— Digital Watermarking, AVI Video, Least Significant Bit, Spatial Domain*

## **I. INTRODUCTION**

### *A. Digital Watermarking*

Digital watermarking is nothing but a digital code embedded into digital cover content e.g. text, image, audio and in our case video sequence.

1) Watermarking is a concept of embedding a special pattern, watermark, is embedded into a document

### *B. Why need Digital Watermark?*

Cryptography ensures confidentiality, authenticity, and integrity Cannot help after decryption Digital Watermarking can help

- 1) Prove ownership
- 2) Identify a misappropriating person
- 3) Trace the marked document's dissemination through the network.

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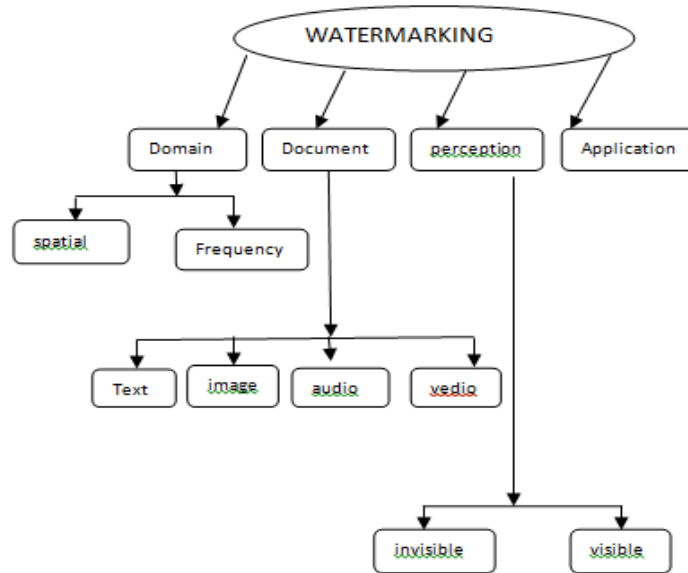


Fig1: Types of watermarking

**C. Digital Watermarking Media**

- 1) Video
- 2) Audio
- 3) Images

**D. Why need Video Watermark?**

- 1) Different interesting watermarking approaches have been proposed
- 2) Most of Video Watermarking is based on the techniques of the image watermarking
- 3) Video watermarking introduces some issues not present in image watermarking
- 4) Frame averaging, frame dropping, frame swapping, statistical analysis, interpolation ...

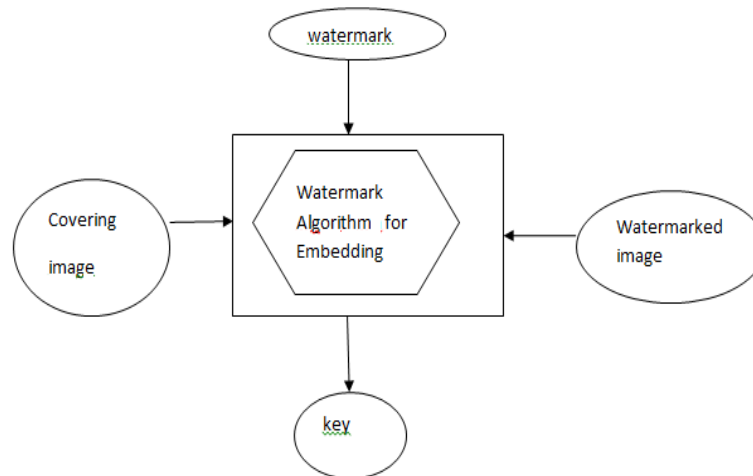


Fig (2):-watermarked Detection process

All digital watermarking include to algorithm: - one as the embedding algorithm and other as the detecting algorithm. These two processes are same for all the type of watermarking techniques. Fig: II shows the watermark embedding process in which the watermark is embedded in the cover image by using the embedding algorithm. And Fig:III shows the watermark detection process in which the embedded watermark is recovered by using the detection algorithm.

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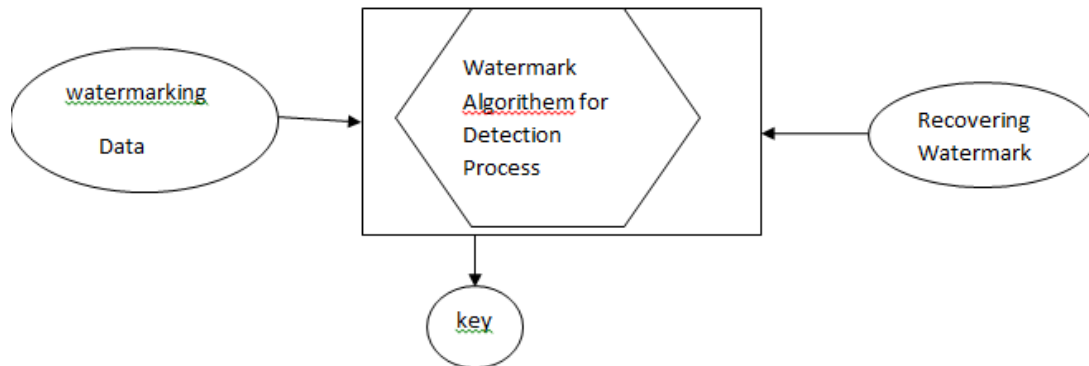


Fig (3):-watermarked Detection process

### E. Video Watermarking Terminology

- 1) *Digital Video*: Digital video is a sequence or collection of consecutive still images.
- 2) *Payload*: The amount of information that can be embedded into the video sequence.
- 3) *Security*: In watermarking the security is assured in the same way as in encryption. Though the algorithm of watermarking process is public, security depends on the choice of the key.

### F. Principle of video watermarking

The complete process of digital video watermarking is described into four steps: Watermark insertion or embedding, Watermark transmission or distribution through a channel, Watermark extraction or detection and Watermark decision.

Watermark embedding algorithm embedded a watermark into original video using a Key, which may be either public or symmetric key. Then the watermarked video transmitted over the channel. At the receiver side, watermark detection/ extraction algorithm used to detect a watermark. In last step, watermark decision, watermarking system analyzes the extracted data.

#### Properties of Video Watermarking—

For digital video watermark some most important characteristics or properties of watermarking process are required. Such as,

- 1) *Robustness*—The watermark should be impossible to remove from watermarked video, without the sufficient knowledge of an embedding process. The robust one is specially designed to withstand a wide range of attacks.
- 2) *Imperceptibility*—The watermark embedded into the digital video sequence should be invisible to Human Vision System (HVS).
- 3) *Unambiguous*—The extracted watermark should uniquely identify the original owner of the video.
- 4) *Loyalty*—A watermark has a high reliability, if the degradation it causes is very difficult to perceive for the viewer.
- 5) *Computational Cost*—Digital video watermark system includes, embedding and detecting process both should be fairly fast and should have low computational complexity.
- 6) *Interoperability*—Watermark system must be interoperable for the compressed and decompressed operations.
- 7) *CBR (Constant Bit Rate)*—In the bit stream domain, watermarking should not increase the bit rate.
- 8) *Random detection*—In video watermarking the detection of watermark can be done in any position of video.
- 9) *Blind detection scheme*—Non-blind detection scheme require the original data, but for video sequence it is very inconvenient to use original data because of its huge content compare to image. While a blind detection scheme doesn't require an original data, so it is useful for video watermarking.

## II. CLASSIFICATION

Classification of Digital watermarking technique

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i)Type of watermark	i)Noise-pseudo noise,Gaussian random and chaotic sequences ii)Image- Logo ,Stamp image etc.
ii)Robustness	i)Fragile:Easily manipulated. ii)semi fragile:resist from some type of noise iii)Robust :Not affected from noise
iii) Domain	i)Spatial:Lsb,spread spectrum ii)frequency:DWT,DCT,DFT,SVD
iv)Perceptivity	i)visible watermarking: channle logo ii)Invisible watermarking:Like steganography
v)Host Data	i)Image watermarking ii)Text watermarking iii)Audio watermarking iv)video watermarking
vi)Data Extraction	i)Blind ii)Semi Blind iii)Non Blind

### III. LSB: LEAST SIGNIFICANT BIT

The LSB technique is the simplest technique of watermark insertion.

- A. Consider a still image : each pixel of the color image has three components — red, green and blue.
- B. Allocate 3 bytes for each pixel. Then, each colour has 1 byte, or 8 bits.
- C. Use a secret key to choose a random set of bits.
- D. The more bits used in the host image, the more it deteriorates.
- E. Increasing the number of bits used though obviously has a beneficial reaction on the secret image increasing its clarity.
- F.
- G. 010101            1 1            110101
- H. 101001 + 1 1            111001
- I. 101000            101000

Example Photo:-

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Original Video

After covered new watermark

### IV. CONCLUSION

In this review we have studied a lot of papers and analyze the content for various digital watermarking techniques also studied the details of the digital watermarking such as the classification, category, and types. Embedding process has got details how to use the different techniques with different domains. Mainly focused on our theme that is LSB technique and try to improve this technique with experimented results. Watermarking provides reliability and security in digital world.

### REFERENCES

- [1] Preeti Parashar<sup>1</sup> and Rajeev Kumar Singh<sup>2</sup> Digital Image Watermarking Techniques PG Scholar<sup>1</sup>, Assistant Professor<sup>2</sup> Department of CSE & IT, MITS, Gwalior, India
- [2] Sourav Bhattacharya, T. Chattopadhyay and Arpan Pal Different Video Watermarking Techniques and Comparative Analysis with Reference to H.264/AVC
- [3] Video Watermarking and Its Applications 1Dr.V.Seenivasagam,Professor/ CSE National Engineering College,Kovilpatti.2S.Subbulakshmi, AP/CSE S.VeerassamyChettiar College of Engg&Tech,Puliangudi, India 3S.Radhamani, Final M.E CSE, S.VeerassamyChettiar College of Engg& Tech Puliangudi, India
- [4] Digital Watermarking Techniques Sasmita Mishra, Amitav Mahapatra,Pranati Mishra College of Engineering and Technology, Biju Pattnaik University of Technology Bhubaneswar, Odisha, India
- [5] A Survey of Digital Watermarking Techniques and its Applications Lalit Kumar Saini<sup>1</sup>, Vishal Shrivastava<sup>2</sup> M.Tech<sup>1</sup> Research Scholar, Professor<sup>2</sup> Department of Computer Science and Engineering, Arya College of Engineering. & Information Technology, Jaipur, India
- [6] T. Wiegang and G. J. Sullivan, Study of final committee draft of jointvideo specification (ITU-T rec. H.264/ISO/IEC 14496-10 AVC) Doc.JVTG050d2, Joint video Team (JVT) of ISO/IEC MPEG & ITU- VCEG(ISO/IECJTC1/SC29/WG11 and ITU-T SG16 Q.6), Dec. 2002.
- [7] C.-P. Fan, "Fast 2-dimensional 4\_4 forward integer transform implementationfor H.264/AVC," IEEE Trans. Circuits Syst. II, Exp. Briefs,vol. 53, no. 3, pp.174–177, Mar. 2006.
- [8] C.-Y. Chen, S.-Y. Chien, Y.-W. Huang, T.-C. Chen, T.-C. Wang, andL.-G. Chen, "Analysis and architecture design of variable block-sizemotion estimation for H.264/AVC," IEEE Trans. Circuits Syst. I, Reg.Papers, vol. 53, no. 3, pp. 578–593, Mar. 2006.
- [9] T. Wiegang, G. J. Sullivan, G. Bjøntegaard, and A. Luthra, "Overviewof the H.264/AVC video coding standard," IEEE Trans. Circuits Syst.V Video Technol., vol. 13, no. 7, pp. 560–576, Jul. 2003.
- [10] J. Zhang and A. T. S. Ho, "An efficient digital image-in-image watermarking algorithm using the integer discrete cosine transform (IntDCT)," in Proc. IEEE Joint Conf. 4th Int. Conf. Info., Commun.Signal Process. and 4th Pacific-Rim Conf. Multimedia, Dec. 2003, vol.2, pp. 1163–1167.
- [11] G. Qiu, P. Marziliano, A. T. S. Ho, D. J. He, and Q. B. Sun, "A hybrid watermarking scheme for H.264/AVC video," in Proc. 17th Int. Conf.Pattern Recogn., Cambridge, U.K., Aug. 2004.
- [12] K. Hühning, H.264/AVC Joint Model 8.6 (JM-8.6) Reference Software [Online]. Available: <http://iphome.hhi.de/suehring/tml/>
- [13] Q. Li and E.-C. Change, J. , Ed., "On the possibility of noninvertible watermarking schemes," in IH 2004, Lecture notes in Computer science (LNCS). Berlin:Springer-Verlag, 2004, vol. 3200, pp. 13–24.
- [14] Sunil Sharma<sup>1</sup>, Mahendra Kumar Rai<sup>2</sup> and Tanvi Sharma, "An Enhance LSB Watermark Approach for Robustness and Security in uncompressed AVI Video," International Journal of Emerging Trends & Technology in Computer Science (IJETCS), Volume 3, Issue 1,January –February 2014
- [15] Sunil Sharma, Mahendra Kumar Rai, "An Enhance Video Watermarking approach for robustness and security using Pixel and Transform Domain in an uncompress AVI video, International Journal for Research in Applied Science and Engineering Technology(IJRASET), Vol. 2 Issue VI, June 2014.
- [16] Tanvi Chauhan, Prof.Vineet Richhariya, Sunil Sharma, "Literature Report on Face Detection with Skin & Reorganization using Genetic Algorithm", Tanvi Chauhan et al. / IJAIR Vol. 2 Issue 2 ISSN: 2278-7844
- [17] Aanchal Chauhan , Zuber Farooqui, "AN INVENTIVE APPROACH FOR FACE DETECTION WITH SKIN SEGMENTATION AND MULTI-SCALE COLOR RESTORATION TECHNIQUE USING GENETIC ALGORITHM", INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTERAPPLICATIONS AND ROBOTICS, Vol. 4 Issue 1, January 2016
- [18] Tanvi Chauhan, Vineet Richhariya, "Real Time Face Detection with Skin and Feature Based Approach and Reorganization using Genetic Algorithm", CIIT Digital Image Processing, Vol 5, No 1 (2013)
- [19] Lata Rao, Sunil Sharma, "A New Approach for Congestion Control for TCP/AQM System in Wireless Network Environment", International Research Journal of Engineering and Technology(IRJET), Volume: 02 Issue: 03 |June-2015
- [20] Daya Sagar Sahu, Sunil Sharma, "Robust PID Controllers for Time Delay Systems in Wireless Network Environment, International Research Journal of Engineering and Technology(IRJET), Volume: 02 Issue: 03 |June-2015
- [21] Jageshwer Shriwas, Shagufta Farzana, " Prediction of Stock Market Price Using Classification Rules and Graph Based Analysis", CIIT Data Mining and Knowledge Engineering, Vol 5, No 7 (2013)

## International Journal for Research in Applied Science & Engineering Technology (IJRASET)

- [22] S R Tandan, Niharika Vaishnav, "A Bird's Eye View of Anti-Phishing Techniques for Classification of Phishing E-Mails" International Journal for Research in Applied Science & Engineering, Technology (IJRASET) (2015)
- [23] Gaurav Kumar Rai, Rohit Miri, , S R Tandan "Enhanced Security Technique in WAP & WEP Based Wireless (Wi-Fi) Network for the Protection against Unauthorized Users international journal for advance research in engineering and technology (ijaet), (2014)
- [24] Niharika Vaishnav, S R Tandan "Development of Anti Phishing Model for Classification of Phishing E-Mail" International Journal of Advanced Research in Computer and Communication Engineering, (2015).
- [25] G Singhal, S R Tandan, R Miri "IAA (Internet access account) based security modal for detection and prevention of cyber crime" International Journal of Engineering Research and Technology, (2013)
- [26] Shikha Gupta, S R Tandan, R Miri "Modeling of Election Algorithm for Coordinator Selection Using Neuro Fuzzy Approach in Distributed Computing Environment" International Journal of Engineering Research and Technology, (IJERT), (2013)
- [27] K Lahre, S R Tandan, R Miri "Implementation of Improved Distributed Wireless Channel Allocation Algorithm for Mobile Computing" Wireless Communication-CIIT-II, (2011)
- [28] Amit Dewangan, Sadaf Rahman, "Secured Wireless Content Transmission over Cloud with Intelligibility" International Journal of Engineering and Applied Sciences (IJEAS) ISSN: 2394-3661, Volume-2, Issue-5, May 2015.



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