

In The Name of God

A Secure and Robust Video Watermarking Based on
Chaotic Maps

- Contents

Introduction

Requirements and types of watermarking systems

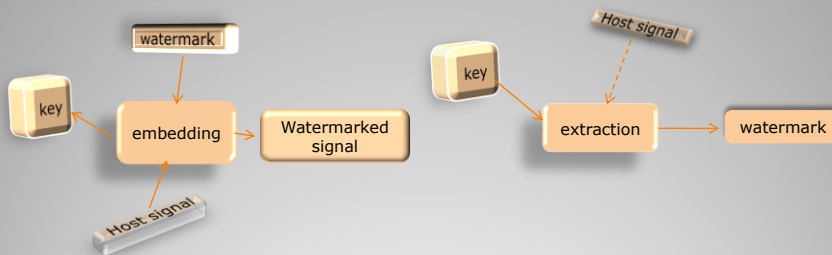
Chaotic maps

The proposed method

Results

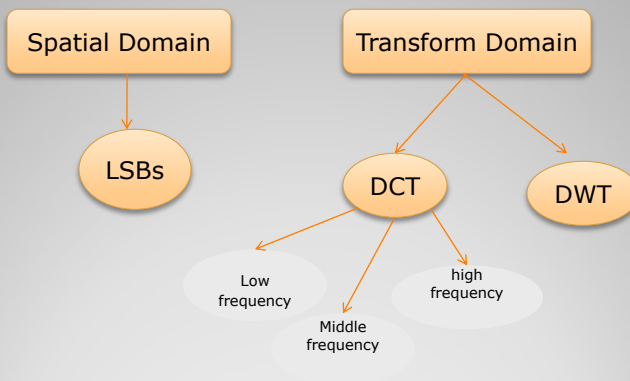
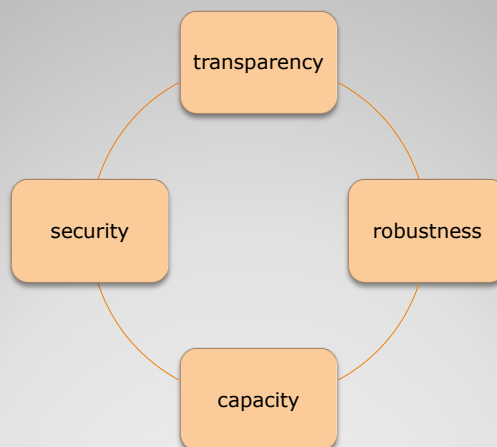
- Recently, with exorbitant growth of internet networks and multimedia technology such as image, voice, and video information exchanges we are increasingly witnessing passage and distribution of these data through internet. Therefore, there is a growing concern that we may encounter illegal distributions.
- *Digital watermarking* is a good technique to prevent illegal distributions of multimedia data

- watermarking



Blind , non-blind , semi blind

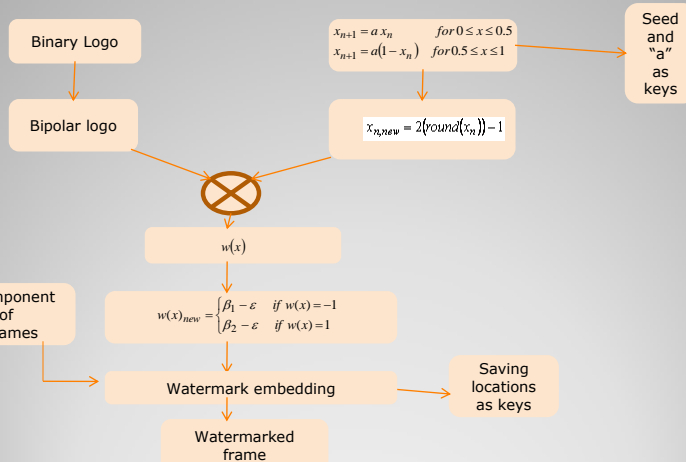
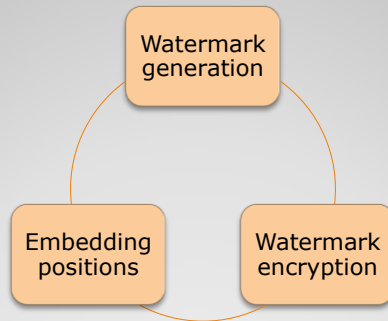
Requirements :



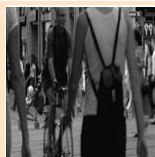
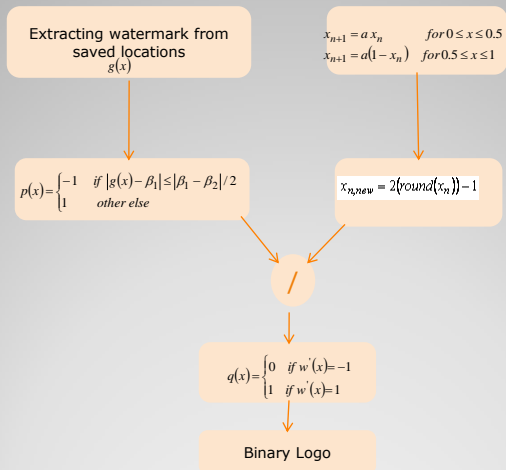
Chaotic maps:

The most important characteristics of these sequences is sensitively dependent on initial conditions.

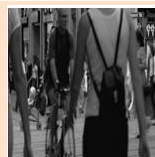
This characteristic of chaotic maps have prompted researchers to use these sequences in watermarking and secure communication systems to good effect.



Extraction



Original Frame
B1=30
B2=64



Watermarked Frame
PSNR=48.11

logo salt & pepper noise BER=0.64%	logo Median filter [3 3] BER=0.00%	logo Median filter [5 5] BER=0.00%
logo Rotation 2° BER=0.60%	logo Rotation 4° BER=2.3%	logo Rotation 6° BER=3.0%

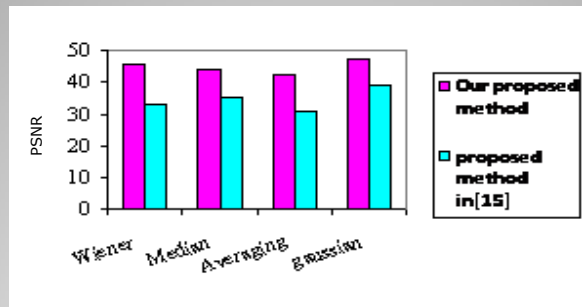
The extracted logos under different attacks

$$sim = \frac{\nabla w \times \nabla w^T}{\sqrt{(\nabla w \times \nabla w^T) (\nabla w \times \nabla w^T)}}$$

Attacks	Our proposed method	Proposed method in [6]
	sim	sim
Rotation 1°	0.9955	0.6551
Rotation 2°	0.9888	0.6270
Rotation 3°	0.9644	0.6334
Rotation 4°	0.9555	0.6280
Rotation 5°	0.9733	0.6251

Comparison results

- Comparison results



Thank You

• **REFERENCES**

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