
(mov)

E-mail: raidrafi0@yahoo.com

mov

.P4 ()

Design and Implementation of Steganographic Algorithm on Video File (mov)

Raid R. Omar Al-Nima

*M.Tech. Technical Computer Engineering
Mosul/Technical college/Computer
Engineering Dept.*

E-mail: raidrafi0@yahoo.com

Sarah B. Ali Al-Nima

*Diploma Computer systems
Mosul/Foundation of Technical Education/
Computer Systems Dept.*

Abstract

In this research, video file type (mov) is used to hide an English text. This method offered high accuracy and secure for data transitions. First, frames are extracted from video file. Then on algorithm has been designed and implemented to hide and extract the text message. Hiding process concerns with converting the text into corresponding codes, then store these codes inside the basic color panel of video file and exactly on the fourth order after floating point of every pixel. Extracting process concerns with inversing the whole process of hiding. Experimental results demonstrated success of hiding process.

The designed algorithm has been implemented using Matlab (ver. 7) on P4 computer.

Introduction

[]

[]

[] BMP

[] VideoClip

[]

frames

Steganography

(Steganography)

(Graphy)

(Steganos)

(Steganography)

[] (covered writing)

(Carrier)

(Host)

[]

(Carrier)

[]

(Audio)

(E-Mail)

[]

Hiding in Digital Video Files

-

(frames)

(Pixel)

(Pixels)

(Resolution)

(Red, Green, Blue)

RGB

.[]

(index)

.(RGB)

Proposed Algorithm

mov

)

.(

Message Hiding Process

:

..... c=099 b=098 a=097 :

.(frames)

()

$$map_{i,1} = (fix(map_{i,1} \times 1000)) / 1000 \dots\dots\dots (1)$$

$$map_{i,2} = (fix(map_{i,2} \times 1000)) / 1000 \dots\dots\dots (2)$$

$$map_{i,3} = (fix(map_{i,3} \times 1000)) / 1000 \dots\dots\dots (3)$$

map

map

i

fix

$$map_{i,1}(new) = map_{i,1}(old) + x_i \times 0.0001 \quad \dots\dots\dots (4)$$

$$map_{i,2}(new) = map_{i,2}(old) + x_{i+n} \times 0.0001 \quad \dots\dots\dots (5)$$

$$map_{i,3}(new) = map_{i,3}(old) + x_{i+2n} \times 0.0001 \quad \dots\dots\dots (6)$$

:

map

map

i

x

map

n

:

Message Recovery Process

-

:

.(frames)

:

:

:

$$y_i = round((map_{i,1} \times 1000) - fix(map_{i,1} \times 1000)) \times 10 \quad \dots\dots\dots (7)$$

$$y_{i+n} = round((map_{i,2} \times 1000) - fix(map_{i,2} \times 1000)) \times 10 \quad \dots\dots\dots (8)$$

$$y_{i+2n} = round((map_{i,3} \times 1000) - fix(map_{i,3} \times 1000)) \times 10 \quad \dots\dots\dots (9)$$

:

map

map

i

map

n

y

round

$$y_{2j} = y_i \times 100 + y_{i+1} \times 10 + y_{i+2} \quad \dots \dots \dots (10)$$



Results

()

()

() : ()

Peak Signal to Noise ratio (PSNR)

:[]

$$MSE = \frac{1}{MN} \sum_{i=1}^M \sum_{j=1}^N (f_{ij} - g_{ij})^2 \quad \dots\dots\dots (11)$$

$$PSNR \text{ in dB} = 10 \text{ Log}_{10} \frac{L^2}{MSE} \quad \dots\dots\dots (12)$$

MSE

M,N

f_{ij}

g_{ij}

L

PSNR ()

)

.(

PSNR :

Text Order	Included pixels	PSNR in DB	Included Frames
1	16384	38.8993	1
2	32768	44.3313	2
3	49152	48.3594	3
4	65536	50.7761	4

PSNR ()

Frames

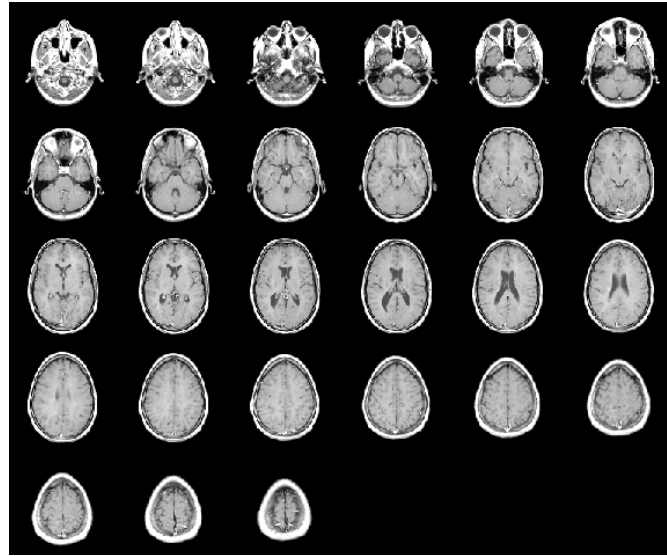
() . ()

(Frame)

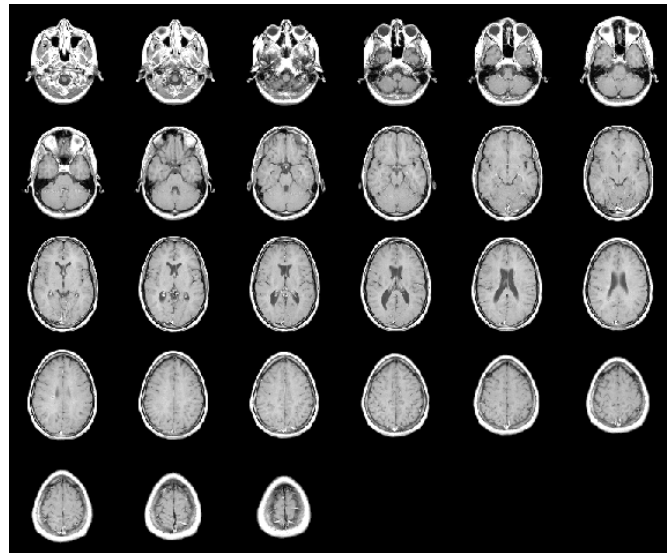
()

Frame

()



:()

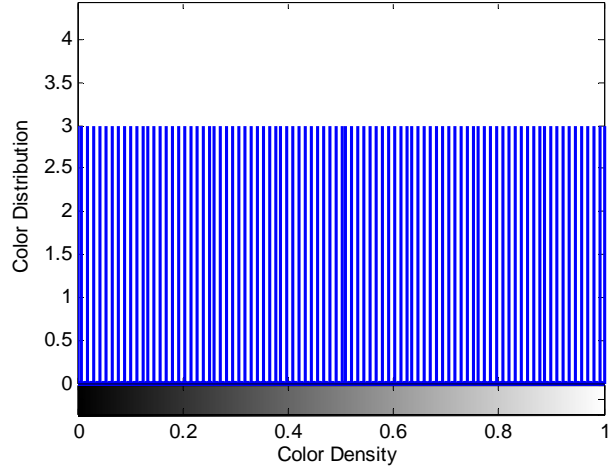


:()

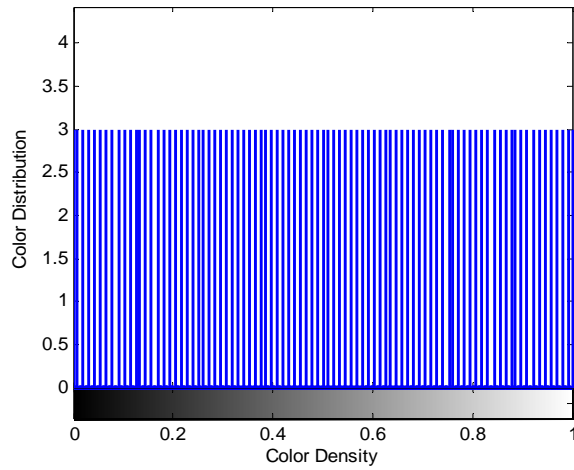
()

(Histogram)

.Matlab



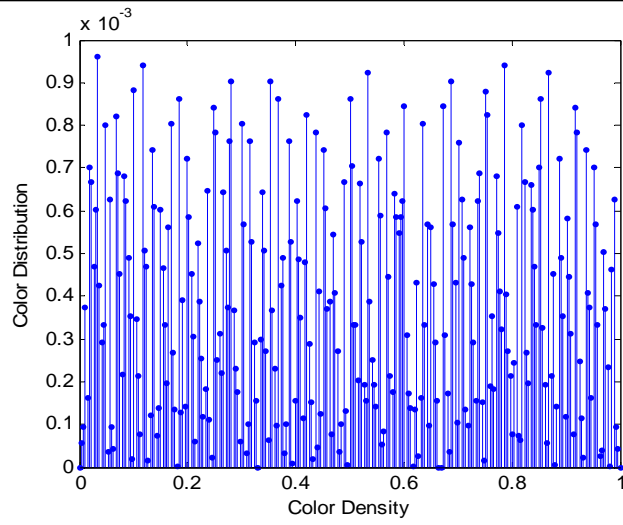
:()



:()

()

.(Histogram)



:()

()

Conclusions

-

:

-
-
-
-
-
-

References

- " []
 "(BMP)
 - /
 " []
 "
- [3] Aelphaeis M., "Steganography FAQ", Zone-H Unrestricted Information, © Copyright Zone-H.Org 2006.
- [4] Doërr, G. and J.L. Dugelay, A guide tour of video watermarking. Signal Processing: Image Commun., 18: 263-282. DOI: 10.1016/S0923-5965(02)00144-3, 2003.
- [5] Mohammed A., "Image Steganography by Mapping Pixels to Letters", Journal of Computer Science 5 (1): 33-38, 2009, ISSN 1549-3636.
- [6] R. Sridevi, Dr. A. Damodaram, Dr. Svl. Narasimham, "Efficient Method Of Audio Steganography By Modified Lsb Algorithm And Strong Encryption Key With Enhanced Security", Journal of Theoretical and Applied Information Technology, 2009.
- [7] Krzysztof S., Igor M., Wojciech M., "Steganographic Routing in Multi Agent System Environment", Journal of Information Assurance and Security 2 (2007) 235-243.
- [8] The MathWorks Inc., "Image Processing Toolbox For Use with MATLAB", Ver.7, 2004, MA, USA.
- [9] Qi, Hairong; Snyder, Wesley E. & Sander, William A., 2002; "Blind Consistency-Based Steganography for Information Hiding in Digital Media". Multimedia and Expo, 2002. ICME '02. Proceedings. 2002 IEEE International Conference on Vol. 1, p.: 585- 588.