

ANOTHER VISION OF IMAGE STEGANOGRAPHY

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Abstract

Steganography is often confused with cryptology because the two are similar in the way that they both are used to protect important information. The desire to send a message as safely and as securely as possible has been the point of discussion since time immemorial. Information is the wealth of any organization. This makes security issues top priority to an organization dealing with confidential data. Whatever is the method we choose for the security purpose, the burning concern is the degree of security. Generally, in steganography, the actual information is not maintained in its original format and thereby it is converted into an alternative equivalent multimedia file like image, video or audio which in turn is being hidden within another object. This apparent message (known as cover text in usual terms) is sent through the network to the recipient, where the actual message is separated from it. This paper presents a method for text encryption and decryption. Result shows hiding of data properly.

1. Introduction

In 21st centuries, communication is a very important matter for sharing information, ideas and thoughts between two persons or group of persons of same country or different countries. It takes place through mobile/internet/telephone. But today's age is secrecy of information. In mobile/internet/telephone communication, there maintains information hiding upto a certain level which is not at all as much as strong for secret information. That is why, there are two techniques involved in data hiding,-

i>Cryptography-It comes from the Greek word '**secret writing**'. It is a method for hiding actual information (plain text) within another text and creates a cipher text.

ii>Steganography-It is an advanced technique of cryptography which covers the information into a multimedia content like image/audio/video etc.

2. Steganography

Steganography is a Greek word which means concealed writing. The word 'steganos' means 'covered' and 'graphical' means 'writing'. Steganography is an art of information hiding into another information/message in such a way that other parties except the recipient(s) cannot realize the existence of actual information and then transmits the embedded file over the network. There are different types of steganography,-

(a)Text Steganography-In this method, the actual information is concealed into a text file.

(b)Image Steganography-In this method, hiding of information is taken place into an image file like JPEG. An image is repress

ented as a collection of pixel (picture element) and every pixel consists of 24 bits RGB color values. By varying this color values, the information is hidden. This procedure is simple and secure.

(c)Audio Steganography- In this method, hiding of information is taken place into an audio file like MP3.

(d)Video Steganography- In this method, hiding of information is taken place into an video file like MP4.

(e) Protocol Steganography- This method involves hiding of information into a network protocol like TCP,UDP.

3.Outline of Steganography Procedure

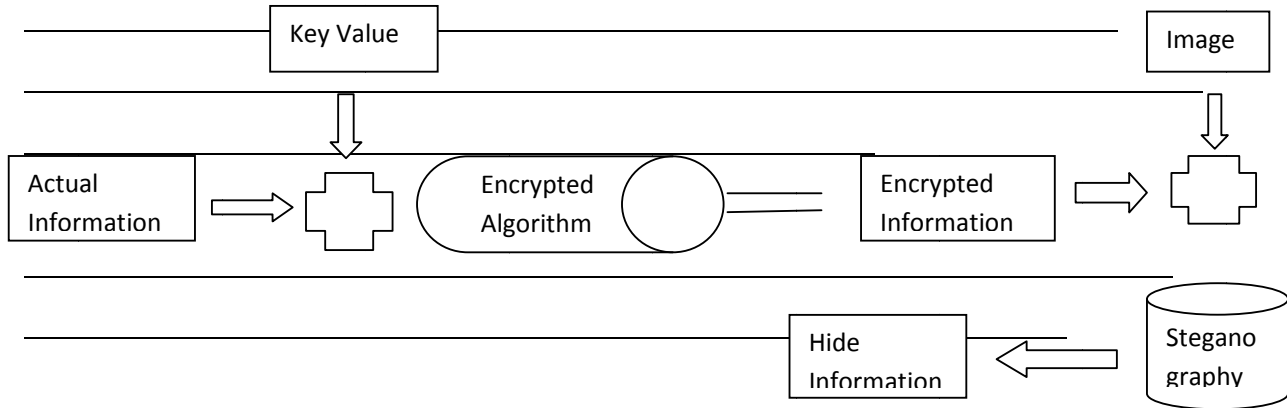


Fig:1. Flow chart of Steganography

3. Cryptography Code

```
#include<stdio.h>

#include<conio.h>

#include<string.h>

void main()

{

int l,n,k=1,i=0,j=1,add[20],ascii_key[20],kl=0,dl=0,ascii_data[20];

char key[20],data[20],dkey[20],decrypt[20],encrypt[20],hide_key[20];

clrscr();

printf("\n Enter the key string: ");

gets(key);

while(key[i]!='\0')

{

ascii_key[j]=key[i];

kl++;

i++;

j++;
```



```
    }  
    n=j-1;  
printf("\n");  
for(i=1;i<=n;i++)  
    printf("%4d",ascii_key[i]);  
printf("\n Enter the data string: ");  
gets(data);  
i=0;  
    j=1;  
while(data[i]!='\0')  
    {  
        ascii_data[j]=data[i];  
        dl++;  
        i++;  
        j++;  
    }  
    n=j-1;  
printf("\n");  
for(i=1;i<=n;i++)  
    printf("%4d",ascii_data[i]);  
printf("\n Encryption Procedure:.....");  
    j=1;  
    n=dl;  
for(i=1;i<=n;i++)  
    {  
        add[i]=ascii_data[j]+ascii_key[k];  
        j++;  
        if(k<kl
```



```
k++;  
  
else  
  
    k=1;  
  
}  
  
printf("\n Display the encrypted data: ");  
  
for(i=1;i<=n;i++)  
  
    {  
  
    encrypt[i]=add[i];  
  
    printf("\n %c  %d",encrypt[i],add[i]);  
  
    }  
  
encrypt[i]='\0';  
  
printf("\n Hidden of key value: ");  
  
for(i=1;i<=kl;i++)  
  
    {  
  
    ascii_key[i]=ascii_key[i]+i;  
  
    hide_key[i]=ascii_key[i];  
  
    printf("\n%c  %d",hide_key[i],ascii_key[i]);  
  
    }  
  
hide_key[i]='\0';  
  
printf("\n Decryption Procedure.....\n Decrypted key value: ");  
  
i=1;l=0;  
  
while(hide_key[i]!='\0')  
  
    {  
  
    dkey[i]=hide_key[i]-i;  
  
    printf("%c",dkey[i]);  
  
    l++;  
  
    i++;  
  
    }
```



```
dkey[i]='\0';  
printf("\n Decrypted data value: ");  
i=1;j=1;  
while(encrypt[i]!='\0')  
{  
    if(j<=l)  
    {  
        decrypt[i]=encrypt[i]-dkey[j];  
        j++;  
    }  
    else  
    {  
        j=1;  
        decrypt[i]=encrypt[i]-dkey[j];  
        j++;  
    }  
    printf("%c",decrypt[i]);  
    i++;  
}  
decrypt[i]='\0';  
getch();  
}
```

4.Output

A)

```
Enter the key string: computer
 99 111 109 112 117 116 101 114
Enter the data string: souma
115 111 117 109 97
Encryption Procedure:.....
Display the encrypted data:
| 214
| 222
| 226
| 221
| 214
Hidden of key value:
d 100
q 113
p 112
t 116
z 122
z 122
l 108
z 122
Decryption Procedure.....
Decrypted key value: computer
Decrypted data value: souma_
```

B)

```
Enter the key string: Hello
72 101 108 108 111
Enter the data string: soumapal
115 111 117 109 97 112 97 108
Encryption Procedure:.....
Display the encrypted data:
H 187
L 212
B 225
J 217
u 208
7 184
f 198
+ 216
Hidden of key value:
I 73
g 103
o 111
p 112
t 116
Decryption Procedure.....
Decrypted key value: Hello
Decrypted data value: soumapal_
```

Conclusions

Steganography is the art of covered or hidden writing [1]. The purpose of steganography is covert communication to hide a message from a third party. Steganography comes from the Greek words *Steganós* (Covered) and *Graptos* (Writing). The origin of steganography is biological and physiological. The term “steganography” came into use in 1500’s after the appearance of Trithemius’ book on the subject “Steganographia”. A short overview in this field can be divided into three parts and they are Past, Present and Future [2]. The majority of today’s steganographic systems use multimedia objects like image, audio, video etc as cover media because people often transmit digital pictures over email and other Internet communication [3]. Cryptography became very common place in the middle ages. Secret writing was employed by the Catholic Church in its various struggles down the ages and by the major governments of the time. Steganography was normally used in conjunction with cryptography to further hide secret information [4,5].

References

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