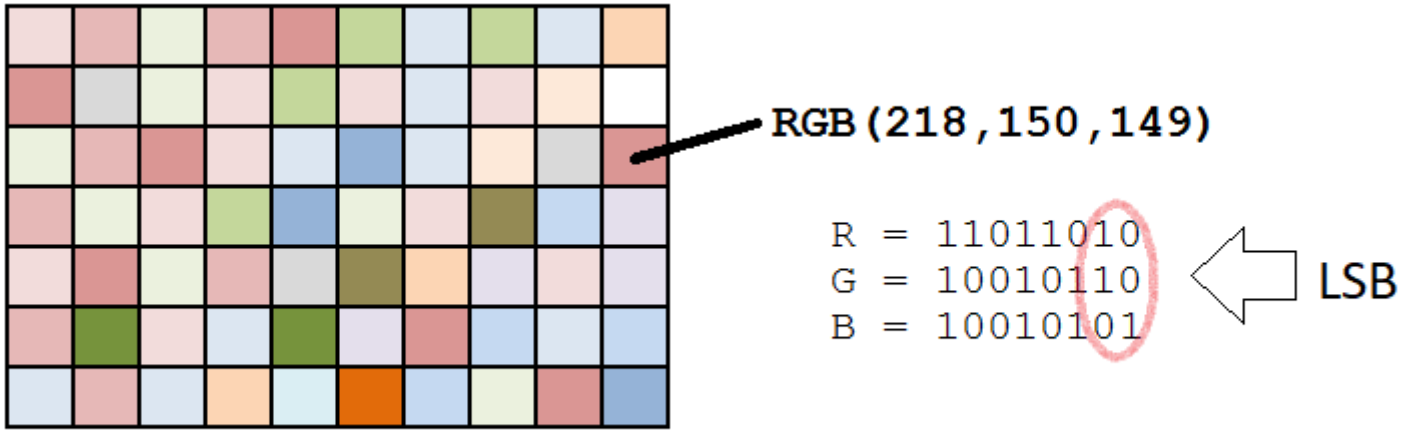
Encryption of data into an image Steganography

What is Steganography?

STEGAN – O – GRAPHY

Secret Writing

The Method



The Method

After conducting a research, I have encountered a simple method for encoding data inside an image. Simply, encode two bits of a character, at a time, in 2 of the LSBs in each pixel, on each layer, Red, Green and Blue.

Original Image

```
11111111  00000000
00000000  00000000
00000000  00000000

11111111  00000000
11111111  00000000
00000000  11111111
```

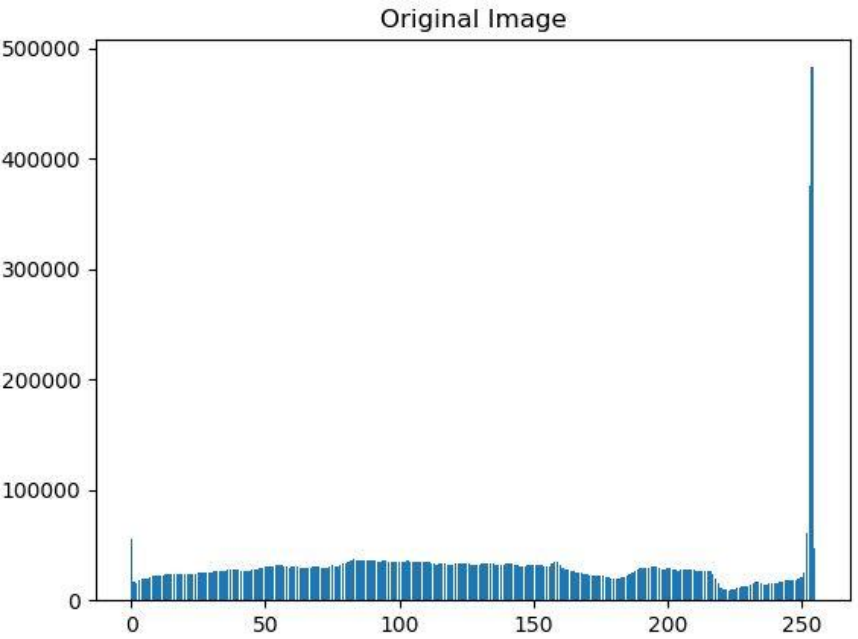
Stego Image

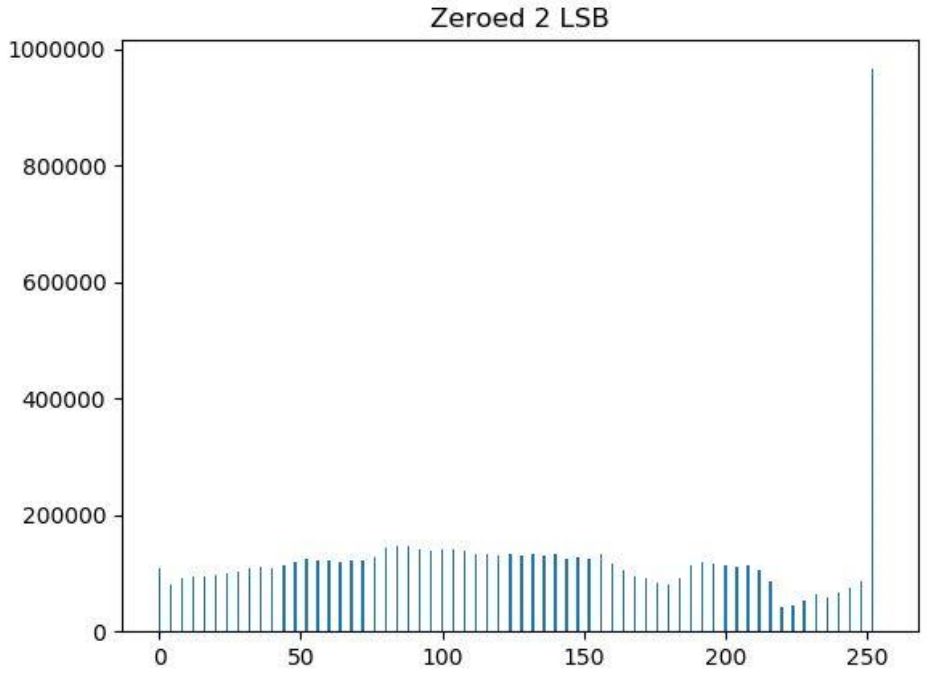
```
11111101  00000011
00000010  00000001
00000000  00000010

11111100  00000011
11111101  00000001
00000001  11111100
```

c	a	t
01 10 00 11	01 10 00 01	01 11 01 00


Original Image
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750
2000

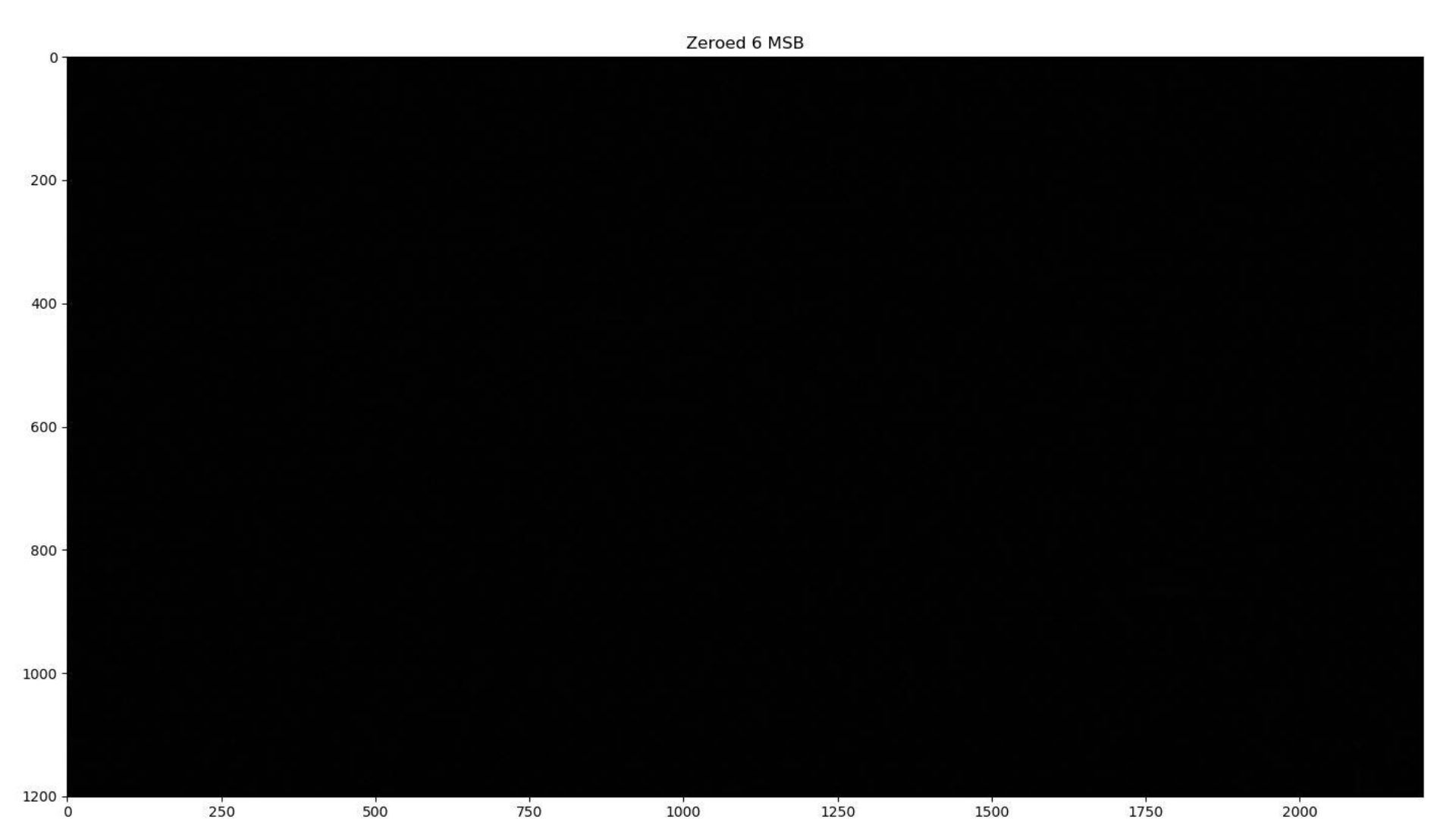

Zeroed 2 LSB
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750
2000

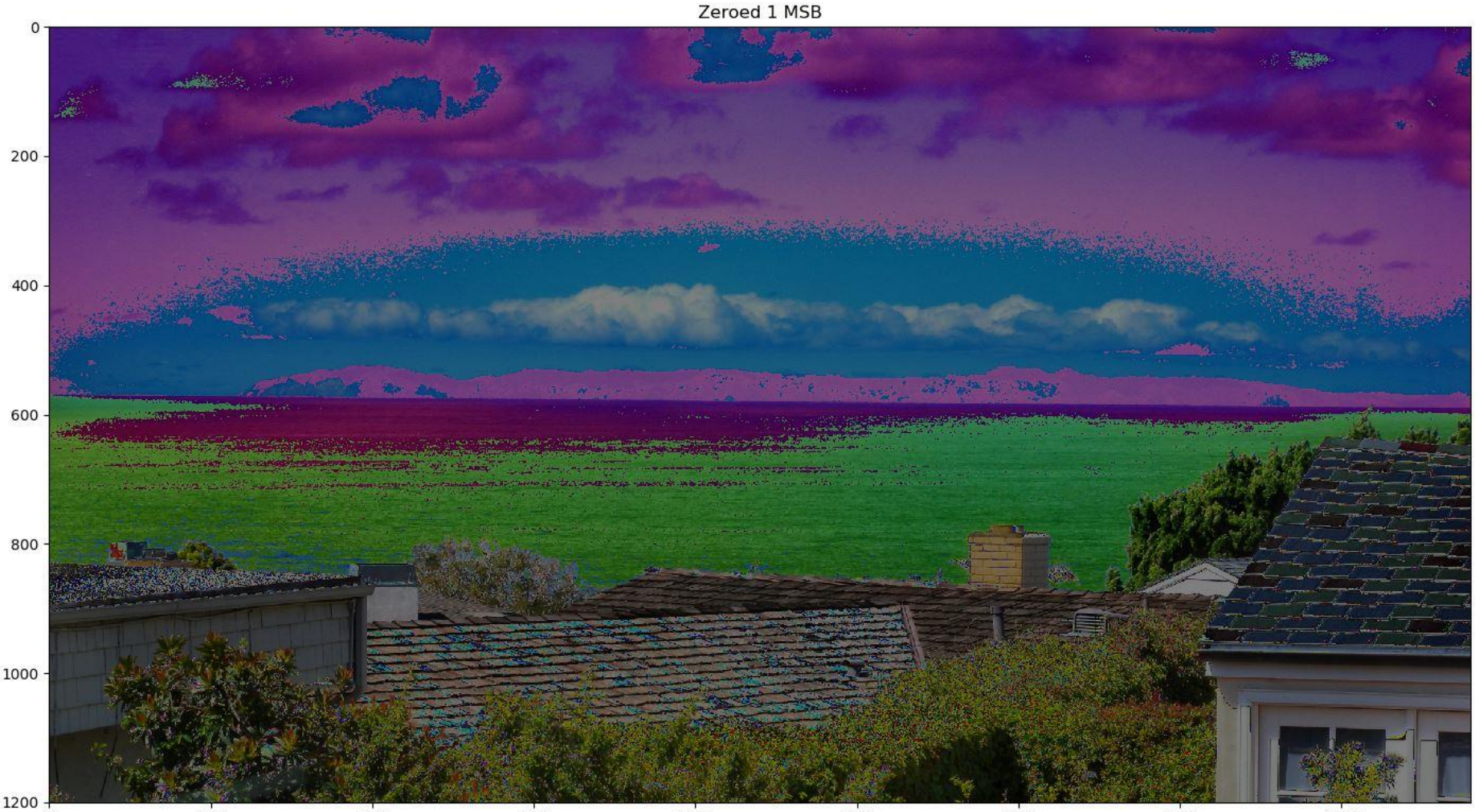

Original Image
500000
400000
300000
200000
100000
0
0
50
100
150
200
250

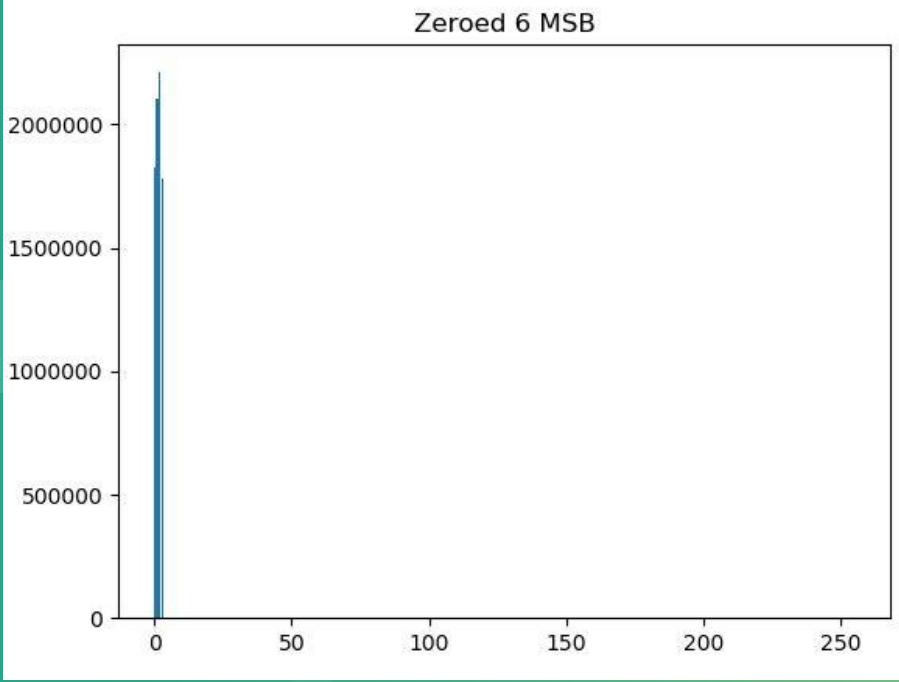

Zeroed 2 LSB
1000000
800000
600000
400000
200000
0
0
50
100
150
200
250

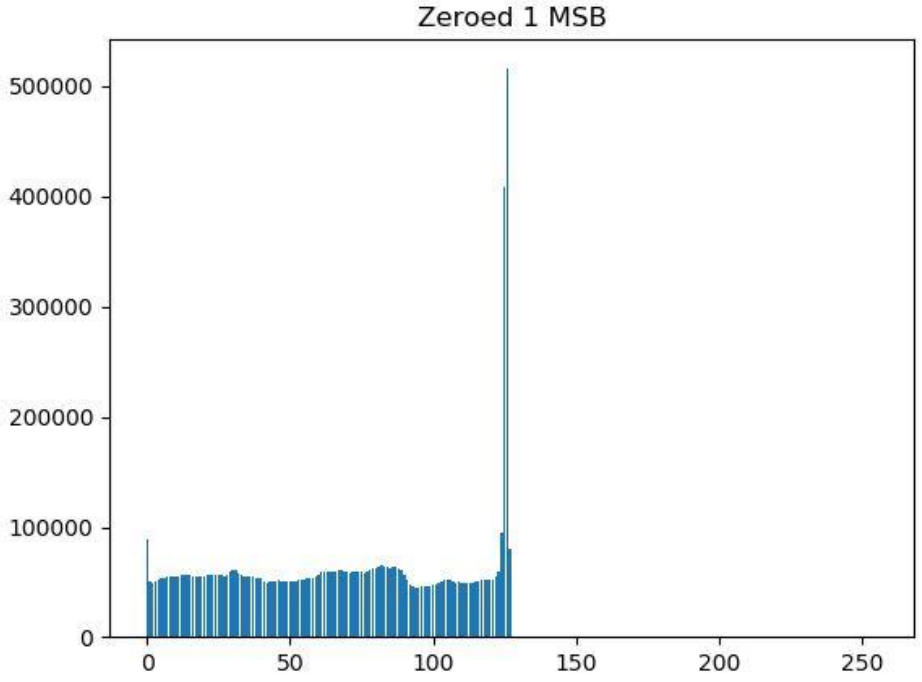

Zeroed 4 LSB
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750
2000


Zeroed 6 LSB
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750
2000


Zeroed 6 MSB
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750
2000


Zeroed 1 MSB
0
200
400
600
800
1000
1200
0
250
500
750
1000
1250
1500
1750
2000


Zeroed 6 MSB
2000000
1500000
1000000
500000
0
0
50
100
150
200
250


Zeroed 1 MSB
500000
400000
300000
200000
100000
0
0
50
100
150
200
250

Encoding

- Encode size of text
- Encode actual text
- Decode size of text
- Decode actual text

Character Encoding

Character Encoding

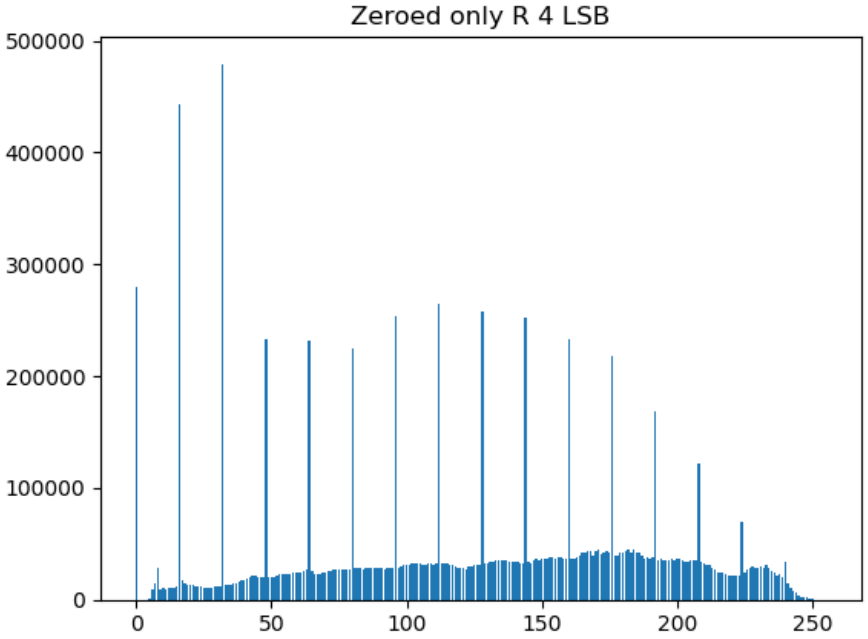
Using bit operations (‘And’-&, ‘Or’-|, ‘Shift’- << >>), for each character of the given string. I’ve extracted two bits at a time, and injected them to the 2 LSB’s in each pixel on each layer.

Interesting Fact

Interesting Fact

if you zero only one layer's 4 LSBs, the image stays visibly intact. Which shows us that when most of the image's data is whole, the human eye won't see any changes


Zeroed only R 4 LSB
0
250
500
750
1000
1250
1500
1750
2000
0
200
400
600
800
1000
1200
1400
1600


Zeroed only R 4 LSB
500000
400000
300000
200000
100000
0
0
50
100
150
200
250