What’s the difference?

Delicious Image

A Message

Steganography is the process of hiding a secret message within a larger one in such a way that someone can not know the presence or contents of the hidden message. The purpose of Steganography is to maintain secret communication between two parties. Unlike cryptography, which conceals the contents of a secret message, steganography conceals the very fact that a message is communicated. Although steganography differs from cryptography, there are many analogies between the two, and some authors classify steganography as a form of cryptography since hidden communication is a type of secret message.

Delicious Image

A Message

Steganography is the process of hiding a secret message within a larger one in such a way that someone can not know the presence or contents of the hidden message. The purpose of Steganography is to maintain secret communication between two parties. Unlike cryptography, which conceals the contents of a secret message, steganography conceals the very fact that a message is communicated. Although steganography differs from cryptography, there are many analogies between the two, and some authors classify steganography as a form of cryptography since hidden communication is a type of secret message.


```
[0, 1, 0, 1, 0, 0, 1, 1, 0, 1, 1, 1, 0, 1, 0, 0, 0, 1, 1, 0, 0, 1, 0, 1, 0, 1, 1, 0, 0, 1, 1,
1, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 1, 1, 0, 0, 1, 1, 0, 1, 1, 1, 1, 0, 1, 1, 0, 0, 1,
1, 1, 0, 1, 1, 1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 0, 1,
0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 1, 0, 1, 1, 1,
0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 1, 0, 0, 0, 1, 1, 0, 1, 0, 0, 0, 0, 1, 1,
0, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 0, 0, 0, 1, 1, 1, 0, 0, 1, 0, 0, 1,
1, 0, 1, 1, 1, 1, 0, 1, 1, 0, 0, 0, 1, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 1, 1, 1, 0, 0, 1, 1, 0,
1, 1, 1, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 1, 1, 1, 0, 1, 1, 0, 0, 1, 1, 0,
0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 1, 0,
0, 0, 1, 1, 0, 1, 0, 0, 1, 0, 1, 1, 0, 1, 1, 1, 0, 0, 1, 1, 0, 0, 1, 1, 1, 0, 0, 1, 0, 0, 0,
```

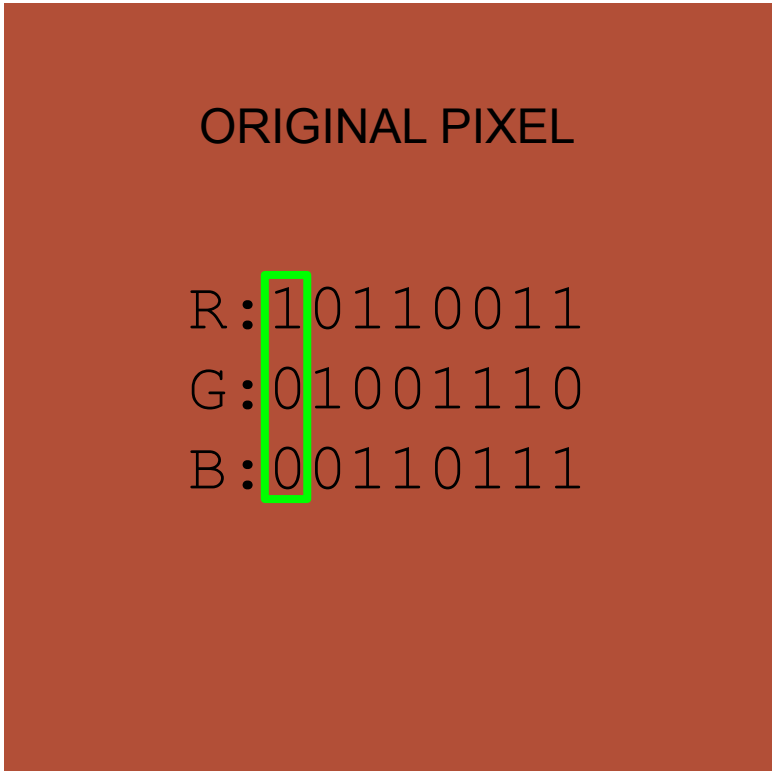
Delicious Image

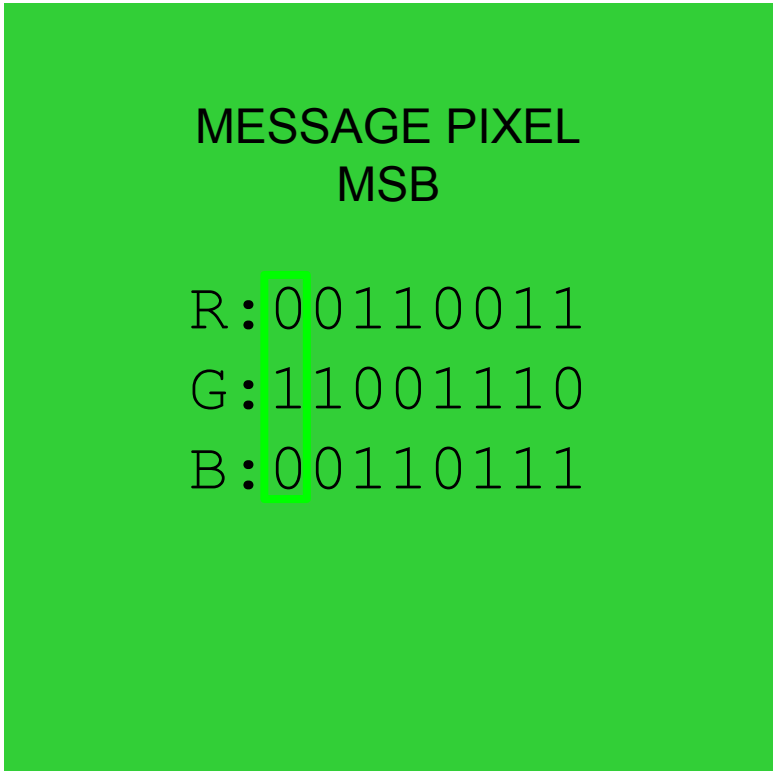
PIXEL

R:10110011
G:01001110
B:00110111

Steganography

[0, 1, 0, 1, 0, 0, 1, 1,





Delicious Image

Delicious Image with Message MSB

Steganography

[0, 1, 0, 1, 0, 0, 1, 1,

ORIGINAL PIXEL

R:10110011
G:01001110
B:00110111

MESSAGE PIXEL
MSB

R:00110011
G:11001110
B:00110111

Each change halves
or doubles the value

Steganography

[0, 1, 0, 1, 0, 0, 1, 1,

ORIGINAL PIXEL

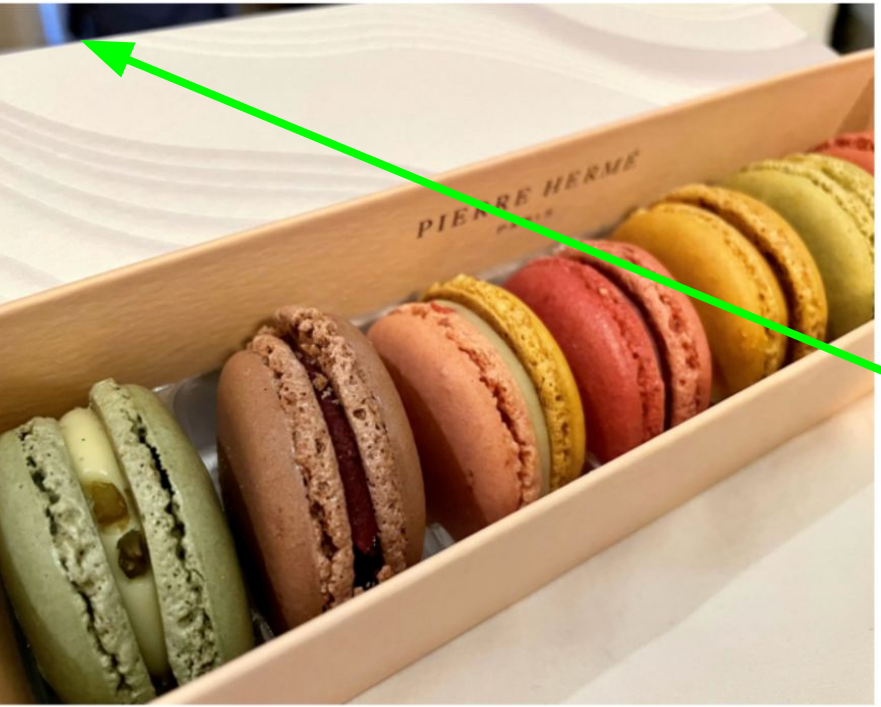
R:10110011
G:01001110
B:00110111

MESSAGE PIXEL
LSB

R:10110010
G:01001111
B:00110110

Each change alters
the value < 0.4%

Delicious Image



Delicious Image with Message

Even though LSB is better than MSB for avoiding detection, both store and retrieve messages in an image just fine.

[18]:
```
hidden_message = extract_message_from_image(stego_img)
print(hidden_message)
```

```
Steganography is the process of hiding a secret message within a larger one in such a way that someone can not know the presence or contents of the hidden mes
sage. The purpose of Steganography is to maintain secret communication between two parties. Unlike cryptography, which conceals the contents of a secret messa
ge, steganography conceals the very fact that a message is communicated. Although steganography differs from cryptography, there are many analogies between th
e two, and some authors classify steganography as a form of cryptography since hidden communication is a type of secret message.

Steganography is the process of hiding a secret message within a larger one in such a way that someone can not know the presence or contents of the hidden mes
sage. The purpose of Steganography is to maintain secret communication between two parties. Unlike cryptography, which conceals the contents of a secret messa
ge, steganography conceals the very fact that a message is communicated. Although
```

[19]:
```
hidden_message_MSB = extract_message_from_image_MSB(stego_img_MSB)
print(hidden_message_MSB)
```

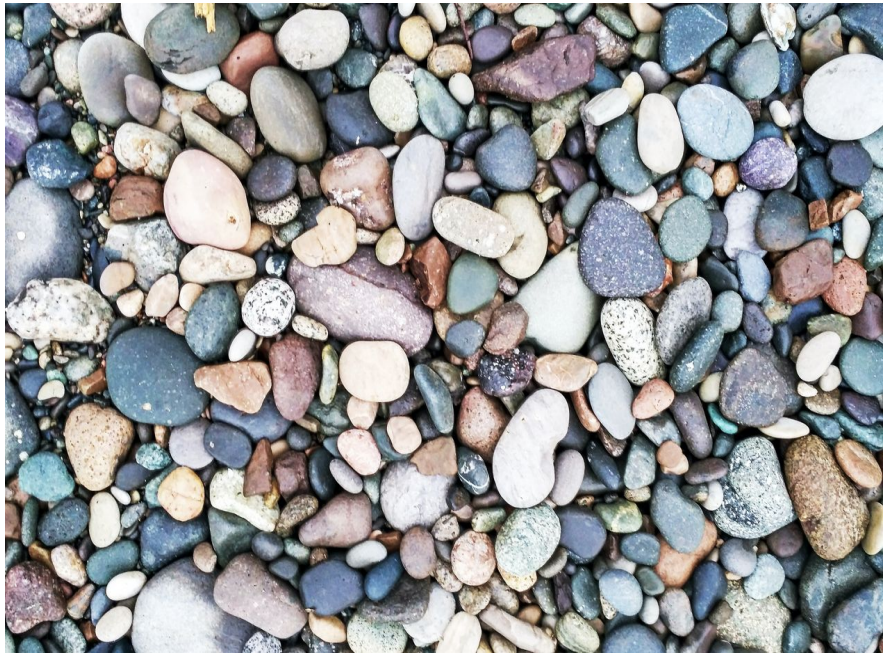
```
Steganography is the process of hiding a secret message within a larger one in such a way that someone can not know the presence or contents of the hidden mes
sage. The purpose of Steganography is to maintain secret communication between two parties. Unlike cryptography, which conceals the contents of a secret messa
ge, steganography conceals the very fact that a message is communicated. Although steganography differs from cryptography, there are many analogies between th
e two, and some authors classify steganography as a form of cryptography since hidden communication is a type of secret message.

Steganography is the process of hiding a secret message within a larger one in such a way that someone can not know the presence or contents of the hidden mes
sage. The purpose of Steganography is to maintain secret communication between two parties. Unlike cryptography, which conceals the contents of a secret messa
ge, steganography conceals the very fact that a message is communicated. Although
```

- Works where the small alterations don’t corrupt the data.
  - Audio
  - Metrics

- Alterations can be detected by fingerprinting

What’s the difference?

Delicious Image



A Jupyter Notebook based demo is available at:

https://github.com/mmobarak/steganography-demo-notebook