Steganography

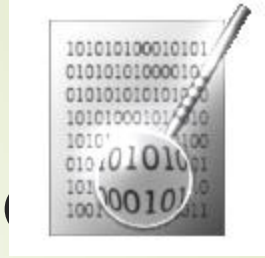
RoadMap

- History
- Modern Usage
- Image Hiding
- Steganalysis

What is Steganography??

- The method of concealing a message so that an outside party does not know the message exists.
- "Security through Obscurity"
- Cryptography's sister in information security

Modern Usage: Legitimat



- Watermarking for copyrighted images (Fingerprinting)
- Substitute for one-way hash value
- Tag notes to images
- Maintain confidentiality

Modern Usage: Illegitimat

- Steal data
- Hide pornography
- Covert communication

Modern Usage: Process

- 3-4 requirements:
  - Cover media
  - Secret message
  - Stego function (with an inverse function)
  - Stego key (optional)

Image Hiding

- Each pixel in an image has an RGB value
- Each RGB value holds an 8-bit sequence of 1s and 0s

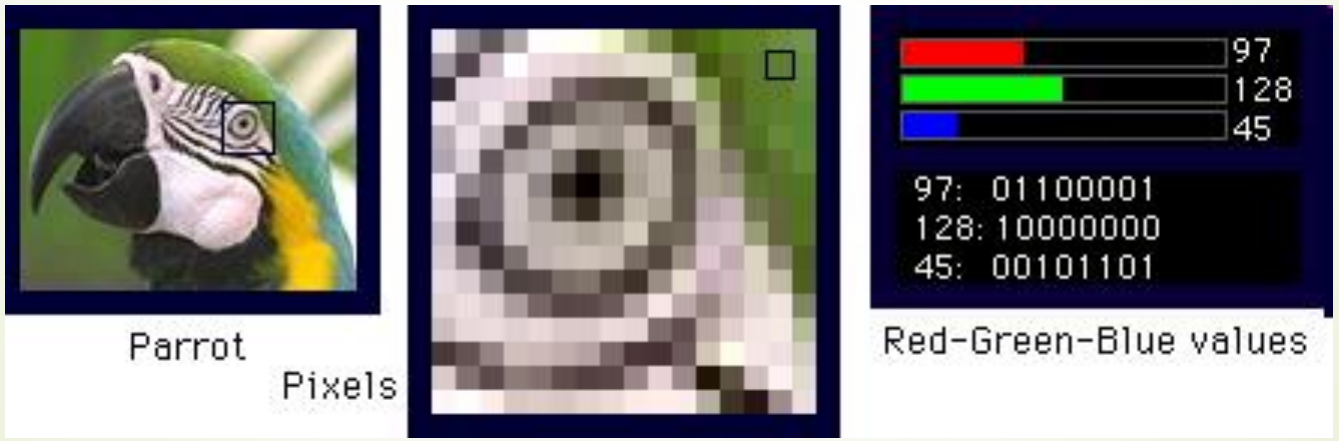


Image Hiding

- Message is broken down into binary code and hidden in the least significant bits

```
00100101
11101010
00101001
```

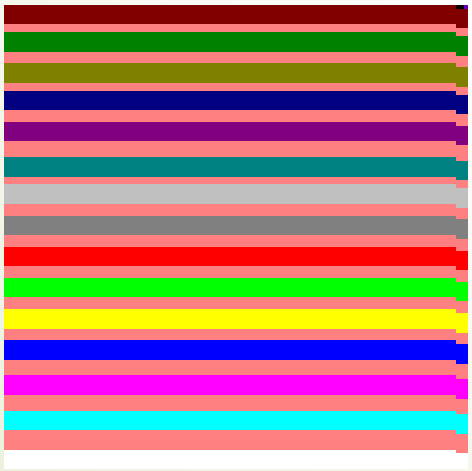
```
00100100
11101011
00101000
```

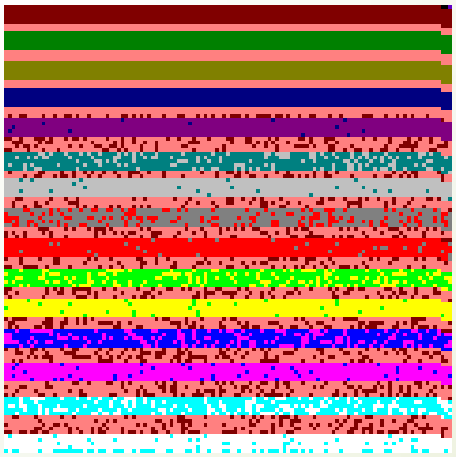
```
00101110  00100101  01010101
01010100  11101010  01011100
00010101  00101001  00111111
```

```
00101111  00100100  01010101
01010100  11101011  01011100
00010101  00101000  00111111
```

Steganalysis

- Easy to spot:
  - Monochrome images
  - Images with distinctive borders
  - 8-bit images





Summary

- Steganography is a theoretical method that has been developed over centuries.
- In modern use, Steganography has both legitimate and illegitimate uses.
- Discovery of Steganographic messages is difficult, but not impossible.