Steganography Tools

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Abstract

Abstract

This project focuses on developing a steganography tool that can embed secret messages within digital media (images, audio, video). We uilized advanced steganographic techniques, the tool embeds encrypted messages into media files. The system architecture involves encoding and decoding. The tool demonstrates the potential for secure communication, making it a valuable asset in fields requiring confidential information transfer.

Introduction

What is Steganography?

- Definition
  - Concealing info within message or object, unnoticed by humans.
  - In computing/electronic contexts, a computer file is concealed within another file.
- How it Works?
  - Concealment Medium : text, image, audio, video
  - Carrier Medium : where message is hidden, e.g. image file
  - Techniques : altering pixels, modifying text spacing, manipulating audio signals

System Architecture

System Architecture

- Encryption
  - Input : concealment medium and carrier medium
  - Output : the encrypted file containing the hidden message
- Decryption
  - Input : the encrypted file
  - Output : the hidden message

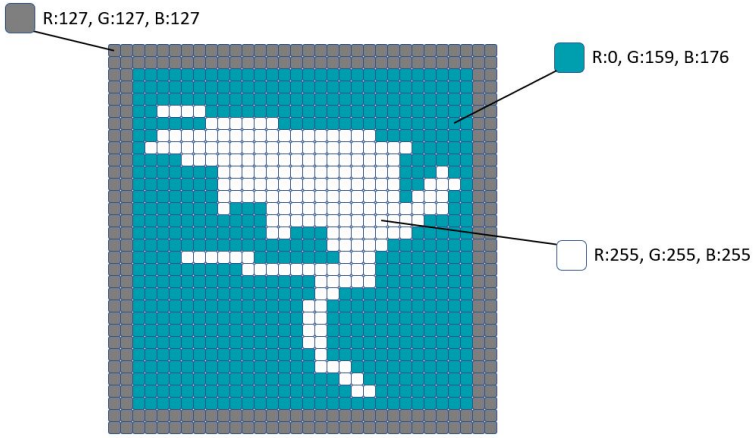
Experiment

Experiment

- convert input files (text, images, audio ... etc.) into binary
- LSB insertion
- convert the encoded file back to its original format

Experiment

- LSB (Least Significant Bit) insertion



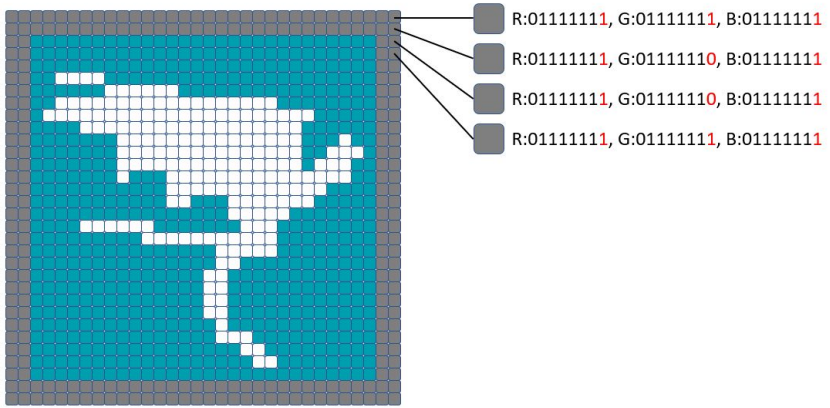


image source: https://reurl.cc/qVNgDR

Techniques and Methods

- eg

ASCII code for “a” = “011000001

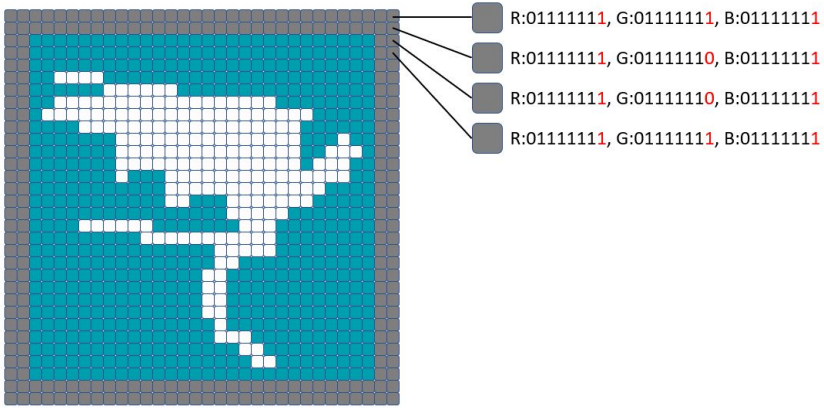


image source: https://reurl.cc/qVNgDR

Demo

Contribution and Future Enhancement

Contribution

- Integrate steganography across different file types
- User-friendly interface

Future Enhancement

- unknown hidden file format
- size restrictions

THANK YOU