Title: A Novel Approach to Data Hiding to Maintain Visual Artifacts of Binary Cover Image

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Introduction

- The security of digital media is becoming a major concern due to its emergencies and widespread. A combination of encryption and steganography can be used to encrypt the security of data. This project emphasize on how to minimize visual distortion. There are various attributes which makes data hiding efficient but this projects focuses on minimizing visual distortion. This is achieved by the various data hiding algorithms.To use image more efficiently patterns are identified.Patterns gives exact length of which data can be hidden. Patterns are selected with the help of histogram.

Motivation

- Limitations of Previous Data Hiding Methods
  In previous data hiding methods there are issues related to the length of data that can be hidden and also the methods leads to visual distortion, which is therefore not very secure. In this project we are trying to reduce the visual distortion produced due to the data hiding and also we are working to store maximum amount of secret data.

Literature Review

- **Steganography in Black and White Picture Images**
  This paper proposes efficient method of embedding and extraction of data in Black and white pictures. The main focus of this method is on steganography in Black white pictures.

- **Efficient Embedding in BW Picture Images**
  This paper proposes novel method of embedding and extraction of data in Black and White picture images. The main focus of this method is on steganography in Black white picture image. This method embeds more number of bits in a block as compared to earlier methods, which are limited to one or two bits.

Literature Review

- **Review on Binary Image Steganography and Watermarking**
  In this paper different watermarking and steganography techniques have been reviewed and analyzed. This is based on image processing in spatial and transform domain. We have reviewed different techniques like data hiding by employing pairs of contour edge patterns, edge pixels, visual distortion tables, visual quality preserving rules, substitution, fixed partitioning of images, run lengths in spatial and using Discrete Cosine Transform, Discrete Wavelet Transform in transform domain.

- **Efficient Steganography using Least Signuficant Bit and Encryption Technique**
  Steganography is the process of concealing a file, message, image, or video within another file, message, image, or video. A new steganography approach for data hiding is proposed. In this approach we hide data in the encrypted image using LSB technique. The hidden data will be recovered by the receiver using the secret key.

Literature Review

- **Blind Steganalysis: A Countermeasure for Binary Image Steganography**
  In this paper a new blind steganalytic method is proposed to detect the presence of secret messages embedded in black and white images using the steganographic techniques.We start by extracting several sets of matrix, such as run length matrix, gap length matrix and pixel difference.

- **High Hiding Capacity Steganography Method Based On Pixel Indicator Technique**
  Image based steganography utilize the images as cover media to hide secret data. So far several methods have been presented in image steganography. Many of these methods use embedding in least significant bits of pixels. Steganography should be strong enough to hide confidential data and does not cause major changes in the image. The use of least significant bits will not lead to major changes in the image.
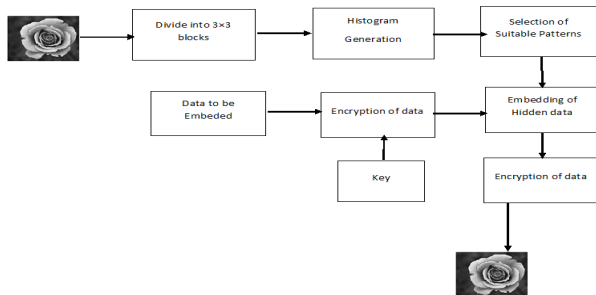
System Architecture
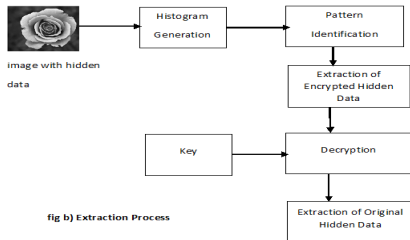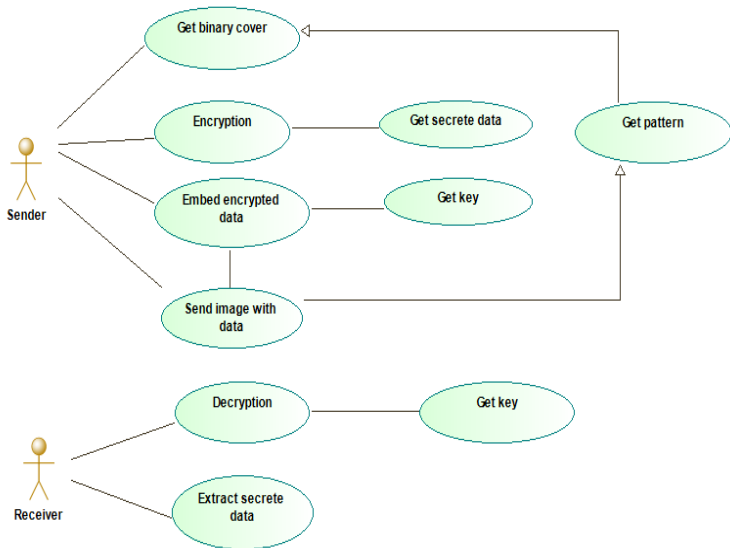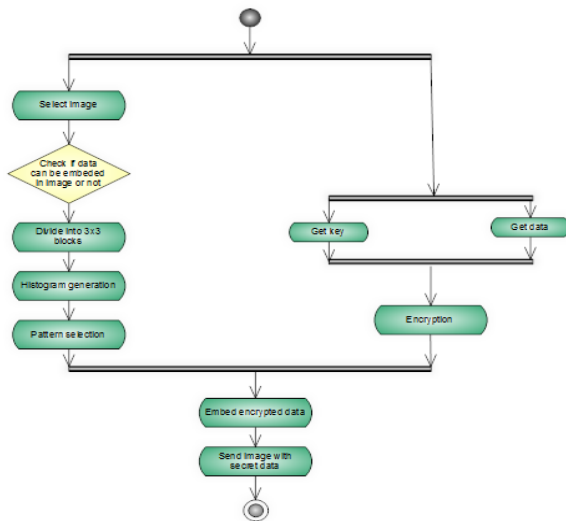

fig a) Embedding Process

fig b) Extraction Process
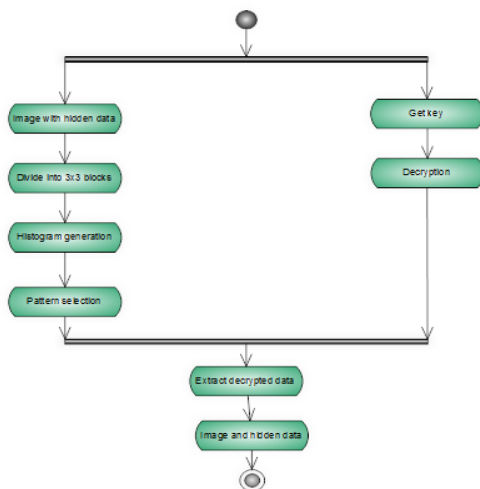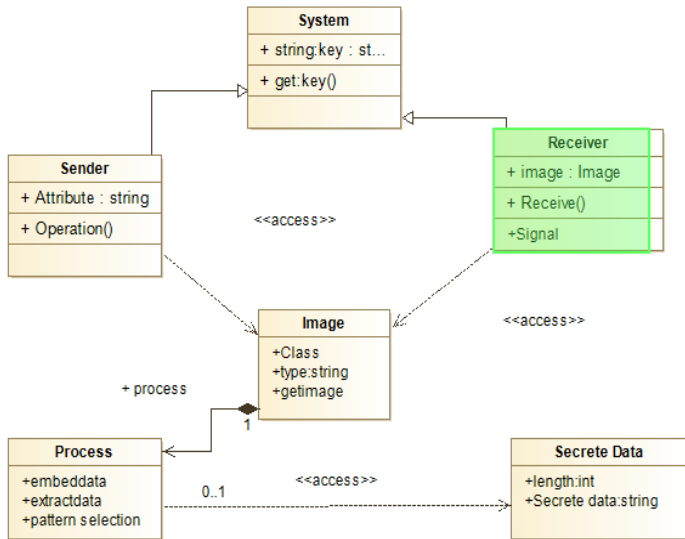
Activity Diagram

Activity Diagram

Class Diagram

System Requirements

- Hardware Requirements(Minimum):

  1. 1 GB RAM
  2. 40 GB Hard Disk
  3. intel i3 processor

- Software Requirements:-

  1. Jdk 7
  2. Netbeans
  3. Mysql database(XAMPP)

Technique

- Server Side:

    1. Binary image is selected
    2. Secret data is embedded in the image.
    3. Block to embed data are chosen in such a way that minimum visual distortion is created.
    4. Data is embedded using Encryption algorithm.
    5. Image and key is shared with receiver to access secret data.

- Client Side:

    1. Binary Image is received.
    2. key is provided to access data.
    3. Extraction algorithm is used to decrypt the data.
    4. Secret data is received.

References

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