HIDING AN IMAGE SECRETLY IN A VIDEO FRAME USING MATLAB

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Objective:

The projects aims at proposing a data hiding and extraction procedure to embed secret message bits in videos. The secret information taken here is grayscale image pixel values. These pixel values are converted into binary and embedded into bits of images in a video frame.

Introduction:

The underlying principle is basic steganography. Steganography means concealing a message by covering it with someone else. Today, any form of data, such as text, image, or video can be digitized and it is possible to insert secret binary information during digitization process. Such hidden information is mainly used for secrecy but can also be used to protect copyright, prevent tampering or add extra information.

In steganography carrier medium is defined as the object that carries the hidden information. Stego-object is the resultant production of steganography that is transmitted to the destination. Data may be embedded in various possible carriers like audio file, document, file headers, digital image and video.

Information hiding requirements include the following:

a. **Imperceptibility** - The video with data and original data source should be perceptually identical.

b. **Robustness** - The embedded data should survive any processing operation the host signal goes through and preserve its fidelity.

c. **Capacity** - Maximize data embedding payload.

Implementation:

An Mp4 video file is nothing but a sequence of high resolution image called frames. Each frame consisting of three channel of RGB. One of these frames is extracted to hide the image.

The intensity of each pixel in the grayscale image to be hidden is represented by 8 bits. Hence, the image is split into 8 parts with i^{th} part containing i^{th} bit of each pixel.

These obtained 8 parts of the image are secretly embedded into the pictures of the extracted video frame by changing the least significant bit of the pictures. Then the frame is

reconstructed and incorporated back into the video and sent to the receiver who decodes it to obtain the secret image.
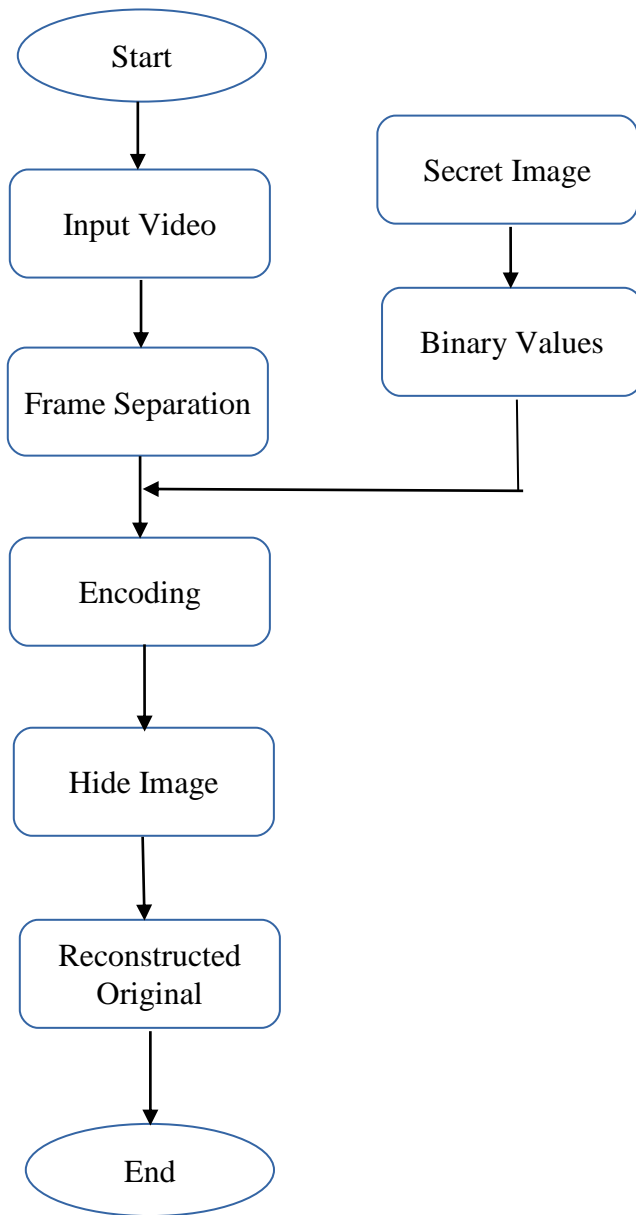
Start

Input Video

Frame Separation

Secret Image

Binary Values

Encoding

Hide Image

Reconstructed Original

End

Fig: Dataflow diagram for encoding.
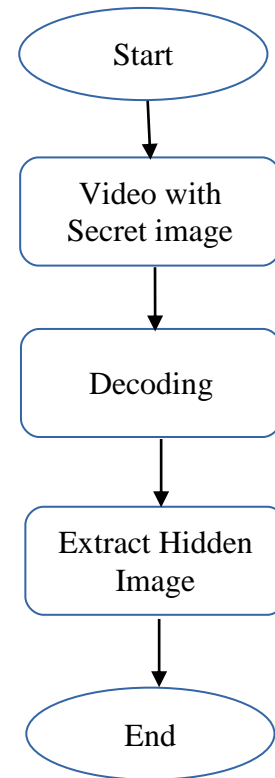
Start

Video with Secret image

Decoding

Extract Hidden Image

End

Fig: Dataflow diagram for decoding.