IMAGE STEGANOGRAPHY BASED SECURED MISSILE NAVIGATION SYSTEM

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ABSTRACT: The aim of the "Steganography Information Hiding in Digital Images" is secure communication. The important of transmission is an issue now a days. There are different methods available for hiding information in different cover media. To prevent unauthorized access of missile navigation data the technique of steganography is best suitable. To launch or navigate missile a system contain so many important data and this data is saved from unauthorized access use steganographic techniques. In this paper we designed this system for military application. In this approach the Least Significant Bit (LSB) technique is used to hide messages in an image. To apply steganographic techniques any kind of cover files can be used such as Image, sound or video files. Here the language used is embedded „c" and MATLAB 7.4 version and the LCD is used for monitoring the status of the project.

Keywords: Matlab, Fire detection system, Edge detection, Color detection.

I. INTRODUCTION

Information hiding techniques are receiving much attention today. The main motivation for this is largely due to fear of encryption services getting outlawed, and copyright owners who want to track confidential and intellectual property copyright against unauthorized access and use in digital materials such as music, film, book and software through the use of digital watermarks. Steganography is an ancient art of conveying messages in a secret way that only the receiver knows the existence of message. So, a fundamental requirement for a stegano-graphic method is imperceptibility; this means that the embedded messages should not be discernible to the human eye. Now a days it is not easy for communicating over a communication channel, but when it comes to military communication it must be as more secure communication as possible. The secret information can be locations, data, messages etc. When it comes to war mode the secret information can be coordinates of missile. So, sharing this coordinate is not easy, it should be shared confidentially. So, we are using Image Steganography technique to implement secured communication. The science of hiding or embedding "data" in a transmission medium is known as stenography.Its ultimate objectives, which are indefectibility, robustness (i.e., against image processing and other attacks) and capacity of the hidden data (i.e., how much data we can hide in the carrier file), are the main factors that distinguish it from other techniques, namely watermarking and Cryptography. We propose using LSB technique in colour images to form an adaptive context for an edge operator which will provide an excellent secure location for data hiding. The simulation is done in MATLAB and the Steganography process is shown. Information will be encrypted using a key which may can also be termed as a password. At receiver end the image will be decrypted which will require password for decryption. The coordinates will be processed by microcontroller and the missile will be navigated at the launching pad using Dc motors in our project.

II. METHODOLOGY

There are many methods are present to hide information in digital images. Following methods is present:

- Least significant bit insertion
- Masking and filtering
- Algorithms and transformations

Here the "least significant bit insertion" (LSB) technique is used Many stego tools make use of least significant bit (LSB).

For example, 11111111 is an 8-bit binary number. The rightmost bit is called the LSB. To change LSB it has the least effect on the value of the number.

The idea is that the LSB of every byte can be replaced with little change to the overall file.
First the binary data of the secret message is broken up and then inserted into the LSB of each pixel in the image file.

III. LITERATUREREVIEW

In the year of 2013 Akhtar, N.Johri, P.Khan implemented a variation of plain LSB (Least Significant Bit) algorithm. The stego image quality has been improved by using bit-inversion technique. LSB method improving the PSNR of stego image.

Through storing the bit patterns for which LSBs are inverted, image may be obtained correctly. For the improving the robustness of steganography, RC4 algorithm had been implemented to achieve the randomization in hiding message image bits into cover image pixels instead of storing them sequentially. This method randomly disperses the bits of the message in the cover image and thus, harder for unauthorized people to extract the original message. The presented method shows good enhancement to Least Significant Bit technique in consideration to security as well as image quality.

BLOCK DIAGRAM

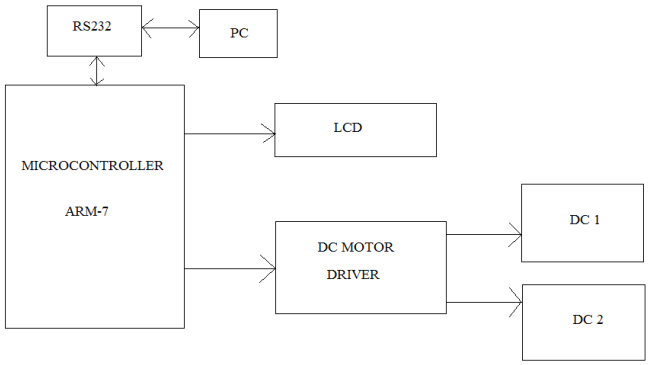


Fig 3.1 Block Diagram of Missile Navigation Sysytem

Field unit:-

- The Receiver module is connected to the pc server. The pc server get the stego image. It perform the decryption on the image and the required data is extracted.
- The required data that is our secret co-ordinates, this co-ordinates are send to the ARM7 LPC2138 serially.

Microcontroller (LPC2138):-

- LPC2138 has fewer number of dedicated pins so we have more number of I/O
- RS232 is used to download c program on the Microcontroller.
- Microcontroller has two dedicated 32 bit timer we are using which we perform degree angle in the specific timing.
- It has 47 I/O pins by which we have connected to two DC motors and LCD .
- Microcontroller LPC2138 perform the operation using the 32 bit timer ,the co-ordinates are converted into rotational angles of dc motor which is calculated using angle and timing analysis i.e using rps of motor.

We are choosing the µc for following reasons:

- Cheap
- Easily available
- Programmer available in college
- Plenty guidance available
- High level of computing possible

DC Motor:-

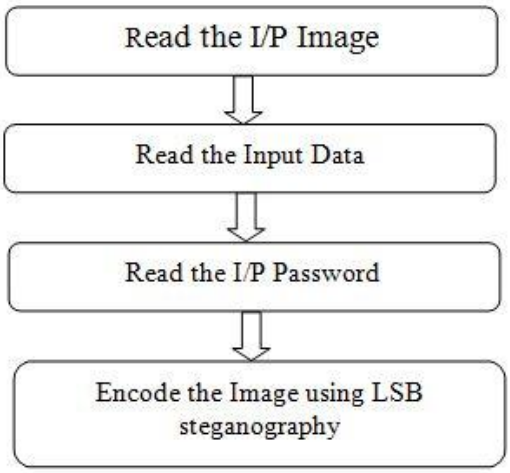
- DC motors are interface with LPC2138 through the motor driving IC which is L293D.
- ARM7 sends specific timing to the DC motors ,by which DC motor rotates angularlyand we get specific angular rotation.
- The DC1 motor is rotating along X-axis means horizontally, and DC2 motor is rotating Y-axis means vertically.
- Dc motor takes the co-ordinate of missile which further sets the missile position.
- 12v ,bipolar dc motor, 100ma current

RS 232 protocol:-

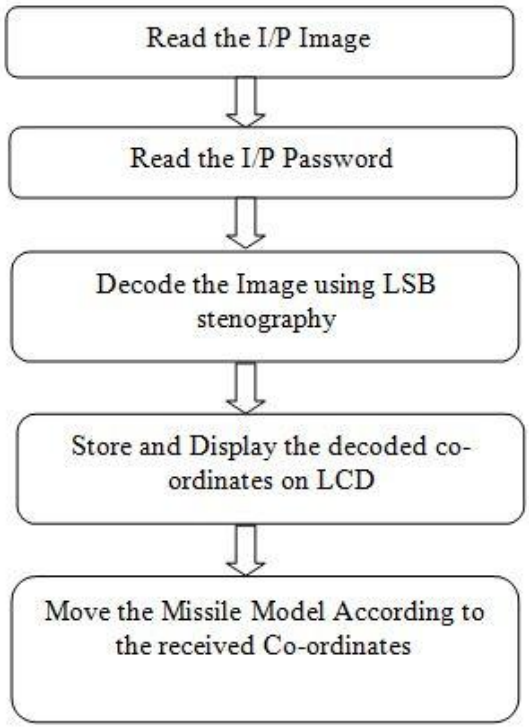
Used for serial communication in between µc to pc. In our project the master is connected to the pc via RS-232.LCD:-

- We have interfaced the 16*2 LCD to the ARM7. the LCD has 4 data lines and dedicated pins are RS, Enable pins are also connected.
- The data which we want to send is transmitted through data lines , RS pin is the register select pin and Enable pin starts the transmission to the LCD.
- We have two grounded the R/W pin.
- LCD has two VSS , one for LCD and one for Backlight.

Encode:



Decode:



IV. RESULT

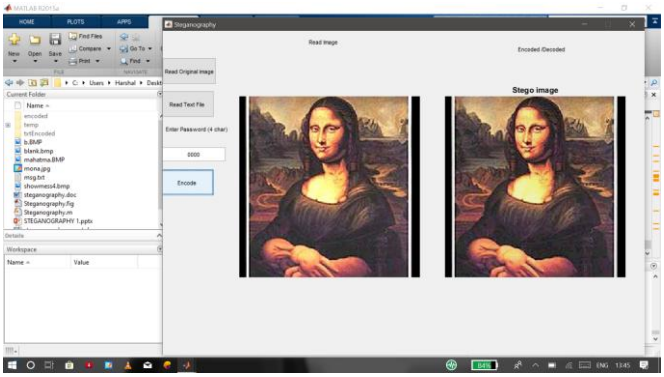


Fig 4.1 Big fire with Person

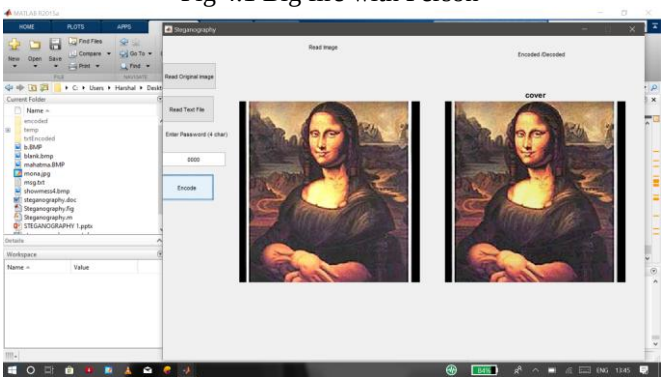


Fig 4.2 Big fire with

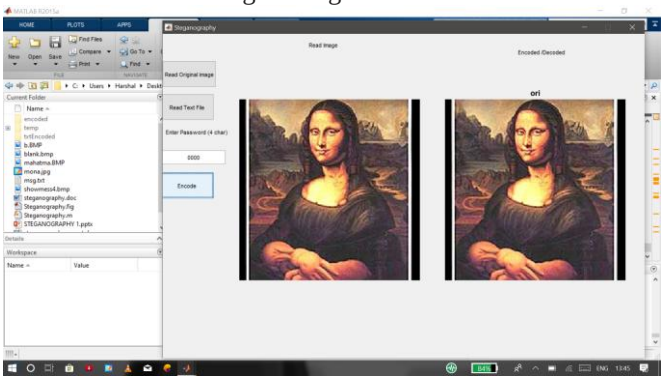


Fig 4.3 Big fire with Person

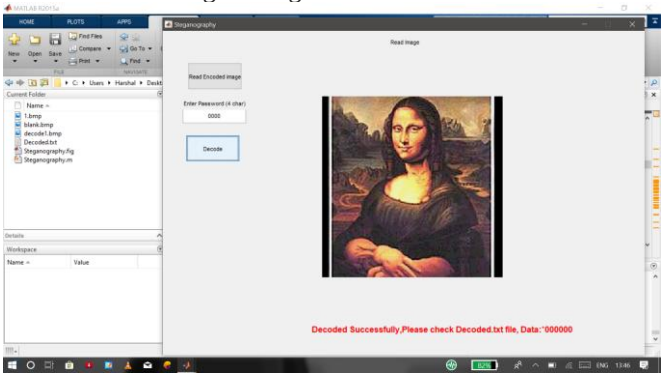


Fig 4.4 Big fire with Person

V. CONCLUSION

- Spatial domain techniques are easy ways to embed information, but they are highly vulnerable to even small cover modifications. Hence the size of stago-image cannot be reduced.
- An attacker can simply apply signal processing techniques in order to destroy the secret information entirely. In many cases even the small changes resulting out of lossy compression systems yield to total information loss.
- Transform domain methods hide messages in significant areas of the cover image which makes them more robust to attacks, such as compression, cropping, and some image processing.
- The spatial domain techniques provide high PSNR, high perceptual quality and high embedding capacity but these not provide robustness. On the other hand transform domain provide robustness while providing very less embedding capacity, low PSNR and low perceptual quality.

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DATASHEETS

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