**DATA HIDING IN AN IMAGE USING COMBINATION OF STEGANOGRAPHY, CRYPTOGRAPHY  
AND TRANSMISSION**

**A Project Report**

*Submitted in partial fulfilment for the award of the degree*

*of*

**Master of Technology**

***in***

**Information Technology**

*by*

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*Under the guidance of*

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**School of Information Technology and Engineering**

Oct 2020.



**School of Information Technology and Engineering**

**DECLARATION BY THE CANDIDATE**

I hereby declare that the thesis entitled **“DATA HIDING IN AN IMAGE USING COMBINATION OF STEGANOGRAPHY, CRYPTOGRAPHY**

**AND TRANSMISSION”** submitted by me to Vellore Institute of Technology University Vellore, in partial fulfillment of the requirement for the award of the degree of **Master of Technology** in **Information Technology** is a record of bonafide project work carried out by me under the supervision of **Prof. Ravinder Reddy.**I further declare that the work reported in this project has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

**Place**: Hyderabad Bhuvana Chandra Pathi

**Date**: 11/10/2020 **Signature of the Candidate**



**School of Information Technology and Engineering**

**BONAFIDE CERTIFICATE**

This is to certify that the project work entitled **“DATA HIDING IN AN IMAGE USING COMBINATION OF STEGANOGRAPHY, CRYPTOGRAPHY**

**AND TRANSMISSION”** by **BHUVANA CHADNRA PATHI (17MIN0618),** to Vellore Institute of Technology University, Vellore, in partial fulfillment of the requirement for the award of the degree of **Master of Technology** in **Information Technology**, is a project bonfires work carried out by her under my supervision. The project fulfills the requirement as per the regulations of this Institute and in my opinion meets the necessary standards for submission. The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma in this Institute or any other Institute or University.

**Prof. Ravinder Reddy**

**Internal Supervisor**

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**ABSTRACT: -**

Cryptography and Steganography are the two popular methods for secure data hiding and Transmission. Cryptography is the science of encrypting and decrypting data. Based On complex mathematics. While Steganography is the practice of hiding information within something that appears to be no information is hidden at all.

So, steganography (hiding information) and cryptography (protecting information)

Both methods have their advantages, Information is hidden using steganographic techniques will not attempt to decrypt the information because intruder will have no idea that there is any hidden information. Whereas message encrypted using advanced Cryptographic encryption algorithms is very difficult to decrypt for an intruder so combining steganography and cryptography makes information more secure.

The primary purpose of this project is protecting confidential data that being transmitted in a network from counterattacks possibly by combining steganography and cryptography.

Different Cryptographic algorithms are used to encrypt the data based on sensitivity. And LSB (Least Significant Bit) method is used to hide the information into images.

**INTRODUCTION: -**

Steganography word is originated from Greek words Steganós (Covered), and Graptos (Writing) which literally means “cover writing”. Generally, steganography is known as “invisible” communication. Today’s steganography systems use multimedia objects like image, audio, video etc as cover media because people often transmit digital images over email or share them through other internet communication application.

In the current project we are making using image as a cover object which is known as image steganography. Generally, in this technique pixel intensities are used to hide the information.

Before hiding data into an image, we are protecting it by using multiple cryptographic technics that too in randomized manner based on the sensitivity, so data in protected in multiple layers from being attached. The main goal of this projects it to communicate securely in a completely undetectable manner

**Keywords or terminology: -**

• Cover-Image: Original image which is used as a carrier for hidden information.

• Message: Actual information which is used to hide into images. Message could be a plain text or some other image.

• Stego-Image: After embedding message into cover image is known as stego-image.

**OBJECTIVE: -**

1. The objective of the project is the allow user to hide their sensitive data into a cover object (here we are using image) to make it undetectable.
2. System will also protect the sensitive data by encrypting it using advanced encryption algorithms before hiding it into cover object
3. System gives option to transmit the data between the users and stores the data of each user in encrypted form in data base
4. System will allow user to download the stego image and transmit it though other communication channels like Gmail and other social media channels.

**DRAWBACKS OF EXISTING SYSTEM AND BENEFITS OF PROPOSED SYSTEM: -**

The proposed technique will not alter or degrade the visual quality of the image after hiding the data in the image where are exiting techniques many of them embedding techniques can be broken or shows indication of alteration of image by careful analysis of the statistical properties of noise. Also using anyone cryptographic technique will make the system volatile so the proposed consists of multiple layers of encryption.

The proposed system has following benefits: -

1. Data or the information is very secure as the system includes not only imperceptibility but also un-delectability.
2. Protects data in multiple layers
3. Quality of image will not be degraded even after embedding the large amount data
4. Huge amount of data can be stored in an image with high resolution and size.
5. User can even access older data with proper and secure authentication
6. Data will be storied in the data base in encrypted form
7. System allows user to download the stego-image to communicate though other communication mediums.

**TECHNIQUES FOR IMPLEMENTATION: -**

* Python scripting is used as a coding language.
* Python pillow library to work with images
* Cryptographic Algorithms like DES,AES, Ceasar cipher,Viginere cipher are used for data protection
* LSB (Least Significant Bit) technique in steganography to hide the text / image data into images
* Django framework to make the system as web application
* HTML,CSS and Java script for the front-end template
* Postgres data base to store data and transmit between the users

**SOFTWARE REQUIREMENT:**

**Laptop or PC:**

* Operating System: Windows 7 or higher.
* Coding Language: Python, HTML
* Framework for web development: Django
* IDE (Integrated development environment): Visual Studio or PyCharm
* Database: Postgres SQL

**HARDWARE REQUIREMENT:**

**Laptop or PC:**

* i3 Processor Based Computer
* Minimum of 1GB RAM