

Project Proposal

Project Title: Secure Image Steganography Tool

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Course: Information Security

Project: BS/DS-5_1

Introduction

In a world where digital communication is rapidly increasing, ensuring the confidentiality and security of sensitive data has become essential. Traditional encryption methods conceal the meaning of a message, but the existence of the message itself remains visible. Steganography goes a step further by hiding the presence of the message. This project presents a **Secure Image Steganography Tool** that hides text data inside image files in a fully undetectable manner.

Problem Statement

Cybercrimes and unauthorized access to private data are increasing daily. Although encryption helps secure confidential messages, encrypted content still draws attention. There is a need for a solution that enables secret communication without revealing that a message exists.

Proposed Solution

The Secure Image Steganography Tool allows users to securely hide secret messages inside image files using encryption and a password-based protection mechanism. The user embeds the message inside a PNG/BMP image, protected through a minimum 6-digit password. Only users possessing the correct password can extract and decrypt the hidden information.

Objectives

- To provide a covert message-hiding mechanism using steganography.
- To improve security by combining encryption with password-protection.
- To enable safe and confidential exchange of messages using normal-looking images.
- To prevent detection of secret information through visual inspection or basic analysis tools.

Tools & Technologies

- Python
- Flask (Web Framework)
- HTML, CSS
- Image Processing Libraries
- Cryptographic Encryption

Scope

The tool supports:

- Hiding secret messages inside PNG/BMP format images.
- Downloading the stego image after embedding.
- Re-extracting the hidden message using the correct password only.
It is suitable for personal, academic, and research communication applications.

Expected Outcome

A fully functional application that hides and reveals encrypted messages within images, allowing secure communication without suspicion.