Encryption in Steganography

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Introduction

This project is a programming web application built with Python. It allows users to input images and hide messages in them, as well as extract them through a steganographic algorithm. It's a great platform for users to share cute photos with secret messages for friends.

Purpose

Sometimes people have secrets that they don't want anyone to know. This could be anything from a secret crush to a government secret! If confessed in a text, anyone could glance at the phone of either user. This application works to counteract this situation using fun methods, focusing on the advantages, disadvantages, and privacy implications of this approach.

Technology

This interactive encryption application leverages Flask to support encryption algorithms coupled with steganography as means to maintain user privacy. Flask, a module provided by Python, offers a streamlined and efficient way to develop simple web applications for those who prefer using Python for their server-side host.

Features

User Experience: Implementation encourages user interaction with an engaging experience that encourages others to join the party!

Ease of Use: Speedy algorithms allow for an all encompassing experience within moments!

Enhanced Security: Layer upon layer of data protection relieves those who've been looking their whole life for real privacy!

How does it work?

The main purpose of using this application is to protect user data from any unwelcome peepers. There are several layers of privacy used to protect these messages. First, there's the fact that the message is virtually impossible to extract from the encoded image without knowing the exact location of the hidden bits. Next is the fact that if anyone sees these messages, they would never think to check them for messages, especially considering that they likely don't know what steganography is. The image is also never uploaded to any sort of database and cleared on every new instance, preventing any possible exposure due to unauthorized access or breaches in security. Finally, if none of that is enough to convince someone of the security of this product, the actual "encryption" part isn't just hiding the message within the image. The message is first encrypted using a completely unique key created per image by referencing certain bits in the image and a tedious process to generate it.

What is Steganography?

Steganography is the practice of hiding data within a file in a way that makes it nearly indecipherable from the image. In this case, this is done by allowing a user to input an image and a message, then it will take the given image and hide the specially formatted message in what's called the "least significant bit." This will take the smallest value of each pixel and modify it to indicate the message to the machine to be extracted in the future.

Usage

Python, Flask, Steganography, Encryption, Cryptograpy, etc.