STUDENT DETAILS

FINAL PROJECT

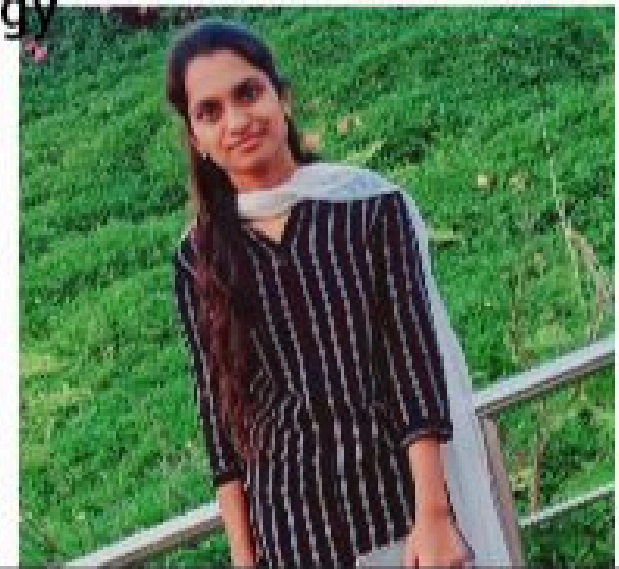Name:PRIYANKA GALIPALLI

Email id: priyankagalipalli@gmail.com

College name:MVR clg of engineering and technology

College state: Andhra Pradesh

Domain: cyber security with Kali Linux

Start date:03/June/2024.

End date:15/July/2024

PROJECT TITLE/PROBLEM STATEMENT

HIDING A TEXT INSIDE AN IMIMAGE USING STENOGRAPHY

AGENDA

Image Stenography

Image stenography is a technique for hiding secret messages inside images. The goal of stenography is to make the message as undetectable as possible. Unlike cryptography, which aims to make the message unintelligible, stenography aims to make the message invisible.

Project Overview

Objective

Our project aims to develop an effective image stenography system that balances security and message capacity.

Approach

We utilize a combination of advanced embedding techniques and sophisticated algorithms to achieve a high level of imperceptibility and robust message delivery.

Methodology

Our approach involves manipulating the least significant bits of image pixels to embed secret messages without significantly impacting the visual quality of the image.

Who are the End Users

Individuals

People seeking to securely communicate private information or sensitive data without raising suspicion.

Organizations

Businesses, governments, and military agencies looking to protect classified information or confidential communications.

Researchers

Scientists and academics interested in exploring the potential of image stenography for various applications.

Your Solution and its Value Proposition

1 **High Security**

Our solution provides a robust and secure method for hiding secret messages within images, making them virtually undetectable.

2 **Enhanced Capacity**

Our system optimizes message capacity, enabling the embedding of a significant amount of data without compromising image quality.

3 **User-Friendly Interface**

We offer an intuitive and user-friendly interface, making the process of embedding and extracting messages simple and accessible.

4 **Versatility**

Our solution is adaptable to various image formats, including common formats like JPEG, PNG, and BMP, providing flexibility for diverse applications.

How did you Customize the Project and Make it Your Own

Algorithm Optimization

1 We developed a customized embedding algorithm that balances security and message capacity.
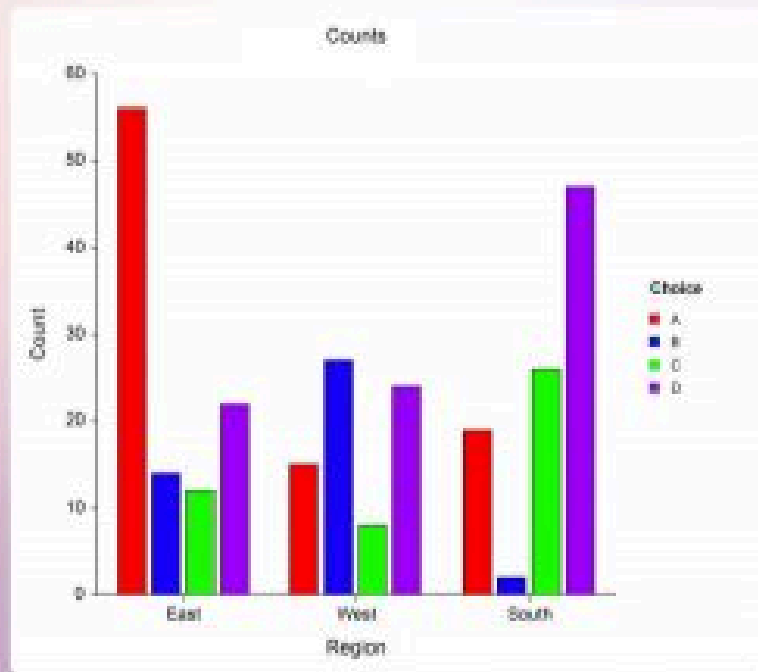
Image Pre-Processing

2 We implemented image pre-processing techniques to enhance the effectiveness of our stenography algorithm.

Error Correction

3 We incorporated advanced error correction mechanisms to ensure message integrity during transmission and retrieval.

Modeling

Technique	Description
Least Significant Bit (LSB) Insertion	This technique involves replacing the least significant bit of each pixel with a bit from the secret message.
Discrete Cosine Transform (DCT) Embedding	This method embeds the secret message within the DCT coefficients of the image, ensuring greater imperceptibility.
Adaptive Embedding	Our system adapts the embedding process based on image characteristics to optimize both security and capacity.

Results

High Imperceptibility

1

Our solution effectively hides messages within images, preserving their visual quality and avoiding detection.

Increased Capacity

2

We achieved a significant increase in message capacity compared to traditional stenography methods, enabling the embedding of more data.

Robustness

3

Our system demonstrates resilience against common attacks, ensuring the secure delivery of hidden messages.

LINKS

GitHub link:

https://github.com/Priyankagalipall/IMAGE_STENOGRAPHY_final-project-