
Linear Algebra

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Hill cipher

Encryption and decryption of image

Abstract

We are going to make a program which will encrypt and decrypt images with a hill cipher logic using python. A technique which provides better security by rendering image content completely using blocks of n letters each of which is multiplied by an invertible $n \times n$ matrix against modulus 26. And to decrypt a image each block is multiplied by the inverse of the matrix

Objective

To provide the security and privacy to user by

- Encryption of image using hill cipher algorithm in order to prevent access of images to unauthorized users.
- Decryption of image using hill cipher algorithm so the authorized users can access the image using hill cipher algorithm

Problem statement

If we do not use any encryption method, our data can be easily accessed by unauthorized users or intercepted by hackers easily. Your data is unprotected as long as it is not encrypted. So it is necessary to use encryption to protect data from hackers or unauthorized users

Methodology

We will give users a menu in which the user will choose an operation from the menu. If he chooses encryption he will have to enter the path of the image which he wants to encrypt and if he chooses decryption he will have to enter the path of the image which he wants to decrypt

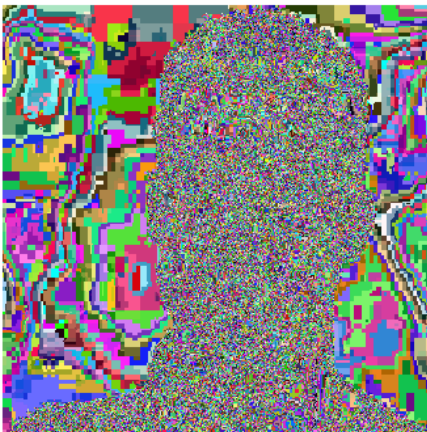
Choosing encryption and entering the path of the image. The copy of the encrypted image will be created in the same folder in which the python hill cipher code file was placed. So check that folder for an encrypted image.

Choosing decryption and entering the path of the encrypted image. The copy of the decrypted image will be created in the same folder in which the python hill cipher code file was placed. So check that folder for a decrypted image.

Conclusions

While doing this project we have learned a lot of things such as the importance of encryption in communication, implementation of hill cipher logic in python, matrix multiplication and inverse calculation in python.

1.Encrypted image



2.Decrypted image

