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1.1 INTRODUCTION A technique, which is used to conceal the secret image into transparencies (which will vary with the user) and these transparencies are distributed to the intended recipients. The transparencies are embedded into the meaningful images so that the intended recipient will have a transparency, which is a meaningful image. Without much computation, only the qualified set of participants can reveal the secret image by simply stacking transparencies. The tool can be used in both ways, to encrypt the secret image into transparencies and also to decrypt the embedded images. User can send encrypted images that are in the format of GIF and PNG. The encrypted transparencies can be saved in the machine and can be sent to the intended person by other means. Experimental results reveal that the tool works with gray-scale images in the format of .png and .gif. 2. THE PROBLEM STATEMENT 2.1 PROBLEM DESCRIPTION In today's world

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there are many encryption and decryption especially in the communication system provided in variety of applications. Encryption and decryption is particularly impacted in the field of military communications and reliable security data to protection

and transmitting. It is used to send the information such as direction, strategy, and secret code And other information. 2.2 PROBLEM SOLUTION Instead of encryption and decryption method of transferring data we can use image processing by hiding data into image it is better method to hide the information and it is very reliable and secure as compared to other method. 3. EXISTING SYSTEM 3.1 INTRODUCTION Our project allow the user to Encrypt image processing data step by step firstly it encrypt the data at sender side using simple steps and method. The interface is very interactive and easy user and understand GUI. Then it is decrypt at receiver side. 3.2 DFD FOR PRESENT SYSTEM

3.3 WHAT'S NEW IN THE SYSTEM TO BE DEVELOPED Our Project

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Encryption and decryption refers to the process of scrambling information so that the observer cannot be detecting the data.

We can use image processing by hiding data into image it is better method to hide the information. 4. PROBLEM ANALYSIS 4.1 PRODUCT INTRODUCTION Our project to make a cartoon image we gate a picture based methodology.

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Is the process of translating plain image data into something that appears to be random and meaningless?

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To decrypt a particular piece of cipher image the key that was used to encrypt the data must be used. 4.2

FEASIBILITY ANALYSIS Our project is completely feasible and also it is implemented with latest technology. We use image processing by hiding into image it is very secure method as compared to other method. 4.3 PROJECT PLAN Our project is used to perform secret data transmission by performing encryption of text on images the sender uses a key to perform encryption and the same key is given to the receiver to decrypt and obtain the data. 5.SOFTWARE REQUIREMENT AND ANALYSIS 5.1 Introduction The technology is increasing gradually but security is main concern of any technology that has been implemented on any machine. When we are implementing any security feature to our server or any machine data protection is our main concern. For that data would be safe we have implemented encryption decryption features on google collab. The project has design on image processing means encryption and decryption being done on image not at plane text.So as we have two types of cryptography symmetric and asymmetric cryptography so here we theseCryptography techniques. 5.2 General Description The project has design with python programming for encryption

decryption. There are various module are used to perform encryption decryption. As we know python is not compiled language and it is open source and free so we can run on any operating system like Window Linux MacOs. We designed project with google collab for image processing encryption. 5.3 Specific Requirements To perform encryption decryption, we need few software and environment. First we need and operating system whether it linux or windows . after that we need to install python on system and few module that have being used in our project.Like

The following module being used:

• Cryptography

• Simple-Crypt

1. Encryption of Data

2. Decryption of Data

3. Libraries used for Cryptography

CHAPTER 6

6.DESIGN Design is a process which includes multiple steps following a respective order. Although these steps can be developed individually but must be in coordination for a system to work in an efficient manner. This project is designed with the help of google colab, Python and openCV for image processing. 6.1 Research Regarding Project Design A lot of research work was done in order to extract the knowledge about the project being considered. Selecting Python as the coding language was based upon the facts that it has several libraries which are required for the image processing in machine learning. Python has a very simple and clear syntax to write the code. We read several articles regarding the topic from the neptune.ai blogs which helped us to understand the process of developing this project and made our requirements crystal clear. From here we came to learn about the OpenCV, which is an open-source library developed by Intel systems. OpenCV along with the TensorFlow mechanism allowed us to deal with all the issues which showed up in the image processing phase. TensorFlow mechanism is compiled of many different models and algorithms to implement in image processing. The next area of concern was to find out the platforms which could help us to integrate all the above functionalities without creating major issues and thus we selected google colab for the implementation of this project. As it provided us with all the requirements of integrating TensorFlow mechanism with OpenCV for image processing and implementing Caesar-Cipher mechanism for encryption decryption phase using Python. 6.2 Introduction to Google Colab Colab has been proved to be one of the finest research in the field of artificial intelligence. Since it works on the tensor flow mechanism, it has become easy to develop projects on this platform as it gives you freedom to develop and modify the interface as well. Another important feature provided in this is the option to switch between normal CPU or high performing GPU of your system to deal with heavier projects which require machine learning algorithms. Python being our first choice of coding, Colab was very helpful in development of this project as there were no additional configuration requirements to be set up. One can write arbitrary python code and import its libraries on the browser itself. It also provides free access to the cloud storage for sharing purpose.

6.3 OpenCV & ITS USES OpenCV could perform from basic to all the major image processing functions like image segmentation, object analysing and recognition, etc. It involves conversion of images into greyscale method to extract the information from the different pixels which could be useful in hiding data under the images as in the process of encryption and decryption. This module has its own functions to read the image using thier path as argument in imread() function and imshow() function to show the output image.

6.4 ENCRYPTION AND DECRYPTION As the core idea of our project is to provide encryption and decryption of the input data in form of images. This is done at the end of the image processing. It is highly important plus required also in these client based project. Encoding performs task to encode the data so that the data will get hidden or not be accessed by the unauthorized users. It helps in protecting the private information, sensitive data and it also enhances the security between client and the server. And if suppose your data is encrypted and then also some unauthorized user get access to your data , they will not be able to read your file. Now talking about the decryption, so if we have encrypted that data then it's obvious we have to decrypt it also. After decrypting the data it will come in it's original form. In short it is a reverse process of encryption. Here the encrypted information is decoded so that the authorized user can access data by using a key or password because decryption needs a key.

CHAPTER 7 7.TESTING Testing has major role to check our project that it is working properly or not. This phase decide that before the deployment of software testing is required so that it could don't create further technical issues. 7.1:

Functional testing As we use cryptography techniques for that we have taken an image that is converting in unreadable or imaginary that normal user cannot be understand or a meaningless image. Testing of image is to check image is loaded or not properly testing of function we are using to load. The function path should be valid. The module we are using we test that the all modules is installed properly or not; like we used open cv NumPy it should be install and import. 7.2: Structural testing Structural testing is the type of testing carried out to test

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the structure of code. It is also known as White Box testing or Glass Box testing.

This type of testing requires knowledge of the code. 7.2.1 Techniques of structural testing: Statement coverage: It insure that the privilege of statement that has implement to perform that specific part should be not beyond that suppose we have import an image by using img.load function than it should work on loading of image only. Branch coverage: it is known as decision covering test It is aiming to test all the branches or edges at least once in the test suite or to test each branch from a decision point at least once. It provides solution for the problem faced in Statement coverage

8.Implementation: Python provides various module to perform various operation so here we cryptography module that python provide. It is very helpful to perform entire encryption decryption process. We used cryptography techniques to perform encryption decryption. 8.1Implementation of project: Firstly, we have install few relevant module that being use in our project by pip install OpenCV, NumPy 8.1.1 OpenCV-Python

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is a library of Python bindings designed to solve computer vision problems.

OpenCV Python makes use of NumPy, which is a highly optimized library for numerical operations with a MATLAB-style syntax. All the OpenCV array structures are converted to and from NumPy arrays. 8.1.2 NumPy: NumPy is a python library or module that provide any numerical operation like creation of matrix or any mathematical operation. In our project NumPy is used to check dimension of image that being processed while encryption decryption. 8.2 Encryption process: Firstly we will read a color image from files with specific path

We are loading the image in img variable from specific path and skimage will import (io) And we check with whether image is loaded or not with help of io.imshow();

8.3 Decryption process: After performing logic of our project will decrypt that image which has loaded in img variable

8.4 Conversion plan: The project is flexible for any types of image like we are taking color image then it will generation different shape it means if we change the image any type of image whether colored or black It will generate every time distinct figure that has mention in the below: CHAPTER 8 IMPLEMENTATION 8.1. Project Implementation Computer vision may be is the stuffy area in Artificial Intelligence with a wide array of uses that pre-owns python. Python is a group of libraries. It has numerous libraries for authentic applications. One such library is Open CV [9]. Open CV is the most famous library used in computer visions with so much fascinating stuff. Open CV is a cross platform library that assimilates application like video and picture taking and producing media. It is importantly used in image conversion, face recognition, object detection, and numerous other shocking applications. We will follow the following steps in this article to convert the image to cartoon. • Ship in library • Studying Input Image • Detecting edges in the image It is the main process in which "all the functionalities required are loaded and the project inputs are completely processed to get the output on the basis of algorithm applied." In this part all the functionalities required for the project to run are loaded and the algorithm is processed on the given input. Implementation phase involves: 1. Loading the functionalities 2. Activation of the project 3. Operation of the project 8.1.1. Loading the functionalities Loading functionalities here refers to the various objects of the project being linked up together so that the project works fine without giving any error. This phase also involves making the arrangements required for the operations. It is the starting stage of project implementation where it includes all the resources. 8.1.2. Activation of the project Project activation is nothing but making the required arrangements to have the project that need to be started. It is the starting stage of project implementation where it includes the allocation of resources so that the project becomes operational, and coordination sets up between the different elements of the project. The considerably basic requirements are taken from clients which are generally an image on which we must perform the encryption and then that are implemented into the most functional form by giving

the required inputs to the system and getting the desired output from the system. 8.1.3. Operation of the project The whole project flows in a sequential manner from the early stages of the working, taking inputs from the client and performing the operations needed to attend the desired outputs in a specific manner so that there come no flaws in the output. The whole processing of the input is done within a specific timeframe so that there is no mishandling of the information occurs. The total time taken to process the input is also monitored to fix the further complications if any occurs during the operations.

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CHAPTER 9 PROJECT LEGACY 9.1. Current Status of the project This project

is currently focused on encryption and decryption on raw image data only. The input of the project is any raw image in applicable format on which the encryption and decryption is processed. The encryption and decryption happen in a way that data is concealed behind the pixels of the image and the output is given in a cartoonified image. The client is able to do encryption as well as decryption on the single platform. These days data is the only wealth and with so many attacks going on the server it is getting difficult to transmit he data in a safe and secure manner, thus we came with the idea of developing this project so that one could feel safe while transmitting data to different locations. 9.2. Remaining Areas of concern As the technology is growing, we are witnessing keys to every problem and sometimes these keys come into hands of unauthorized persons who aim to steal the data for their personal uses. The project works fine with the image encryption, but we need to focus on every aspect of the data processing. The remaining area of concern includes applying much safer algorithms which are impossible to break in case any attack occurs in future. The software should work on any kind of data not only gets specific to image encryption and data should reach safely to the authorized person only. 9.3. Technical and managerial lessons learnt Developing this project played a very significant role in making us understand the basics of image processing and the process of encryption and decryption. This project was aimed to develop a encryption decryption website and with some sort of knowledge clearance we were able to upgrade the project to image processing along with the process of encryption and decryption. This project helped us to learn about the various features of google colab and how to develop projects on these online executable platforms. The project has a vast operational and functional properties which could have been difficult to develop but with proper distribution of the tasks among all the members we were able to develop it in a more learning manner. Fixing the errors and glitches are one of the toughest parts of a software and we were able to learn some of the error fixing strategies as well.

CHAPTER 10 10.USER MANNUAL The project was developed in a very simple way so that user faces no complexions and gets a true user-friendly experience. This project elements are classified according to their working in separate sections from very first step of connecting the drive, taking inputs, processing of image to get the desired output. Every step follows in a continuous manner to provide the best user experience and complete view of the operations going on. we have used google colab research platform and the python programming for the internal coding. Python provides us several high-power inbuilt features and libraries which made the development of project easier. A client should follow these steps to get the desired output from the host site: • Mounting of drive: connecting your google drive to the server as the input data should be taken from drive and there is no need to upload your critical data on server site. Here, one needs to connect his personal drive to the system and mount it. After connecting your drive, you need to click on the play button or press "SHIFT+ENTER" drive will get mounted and gets to the next step.

• Importing the libraries: After the path of image is provided ,activation of the functionalities is to be done. This step requires importing all the libraries which are cv2[6], NumPy[7], cv2_imshow[8]. These libraries are required to process the input image.

• Specifying the path: Next step involves providing the correct path of the image on which encryption has to be performed and serves as the input. From the drive you need to get the path of the image and enter it into the reading image section [9] of the interface.

• Output Generation: This is the final step where one only needs to press the play buttons of different sections in a respective manner. This is the step where all the image processing and system operations are performed. This step involves following processes: • Converting input image to RGB [10] • Detecting edges of the input image [11]

• Measurement of the size of image I.e., height and width [13]

• Displaying the key image as encrypted from using greyscale method [14,15]

• Performing encryption and decryption using the cipher text [16]

• Output as a cartoon image with all the encryption and decryption texts [18] Thus, we see how the image provided by client is processed to give the desired output. We only needed to get the path of user image and all the encryption and decryption were performed on this image only using the cipher text algorithms. Client can perform all the needed operations on a single platform without any exchange of original data so that security does not get compromised. After doing edge detection, region smoothening, we performed encryption and decryption for providing security to the user, So, in the early stages of the operation we stored the keys. The output we get after is in greyscale method. This is further converted into a cartoon form of image.

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there are many encryption and decryption especially in the communication system provided in variety of applications. Encryption and decryption is particularly impacted in the field of military communications and reliable security data to protection

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2/7 | **SUBMITTED TEXT**   20 WORDS | **89%**   **MATCHING TEXT**   20 WORDS

Encryption and decryption refers to the process of scrambling information so that the observer cannot be detecting the data.

Encryption and Decryption, a type of cryptography, refers to the process of scrambling information so that the observer cannot be detecting the data.

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3/7 | **SUBMITTED TEXT**   18 WORDS | **88%**   **MATCHING TEXT**   18 WORDS

Is the process of translating plain image data into something that appears to be random and meaningless?

is the process of translating plain text data (plaintext) into something that appears to be random and meaningless (

W   https://docs.microsoft.com/en-us/windows/win32/seccrypto/data-encryption-and-decryption

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4/7 | **SUBMITTED TEXT**   24 WORDS | **85%**   **MATCHING TEXT**   24 WORDS

To decrypt a particular piece of cipher image the key that was used to encrypt the data must be used. 4.2

To decrypt a particular piece of   ciphertext, the key that was used to encrypt the data must be used.

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the structure of code. It is also known as White Box testing or Glass Box testing.

the structure of 24 the code. Structural testing is also known as white-box testing, clear box testing, glass box testing,

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6/7	SUBMITTED TEXT	13 WORDS	87%	MATCHING TEXT	13 WORDS

is a library of Python bindings designed to solve computer vision problems.

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7/7	SUBMITTED TEXT	10 WORDS	100%	MATCHING TEXT	10 WORDS

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