Synopsis Report on

Cartoonify an Image using Python and Open CV

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Student's Declaration

I/we here by declare that the work presented in this report **titled "Cartoonify an image Using Python and Open CV. "**is an authentic record of my/ our own work performed under the supervision of Ms. Shreya, **Assistant Professor**, **CSE-DS.** The issue contained in this report was not submitted by us for the award of another degree. **Date:**

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This is to certify that the above statement made by the candidate(s) is correct to the best of my knowledge.

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…… **Ms. Shreya**

Acknowledgement

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ABSTRACT

The objective of this project is to create cartoon images or videos from real-world pictures and videos. The paper proposes the use of a Generative Adversarial Network (GAN) called Cartoon GAN, which uses two loss functions, namely, content loss and adversarial loss, to generate clear and sharp images. The project will be implemented using the OpenCV library in Python, which is a cross-platform library used for Computer Vision. The paper also presents a novel approach to object styling based on popular assumptions related to the color and locations of objects in cartoon films. The proposed approach considers the objects to be usually drawn near the center of the image, with colors being drawn near the edges, and the object colors being lower in saturation towards the edges.

Chapter 1

Introduction

we will build one interesting application that will cartoony the image provided to it. To build this cartoony application we will use python and OpenCV. This is one of the exciting and thrilling applications of Machine Learning. While building this application we will also see how to use libraries like easy GUI, and all. Here you have to select the image and then the application will convert that image into its cartoon form. Mainly, we build this application using OpenCV and python as the programming languages.

Cartoony image refers to the process of converting a regular image into a cartoon-like image. It is often used in creating animations, comics, and other visual content. OpenCV is a popular opensource library for computer vision and image processing in Python. It provides various functions and algorithms for image manipulation and processing, including carnify. In this process, the image is first converted to grayscale, then filtered using a bilateral filter to reduce noise and keep edges sharp. An adaptive thresholding algorithm is then

OpenCV

OpenCV is an open-source library in python that is used mainly for computer vision tasks in the areas of machine learning and artificial intelligence. Nowadays, open CV is playing a major role in the field of technology. Using OpenCV we can process

Chapter 2

Related Work

Python: role We use python as a programming language for building the application. **cv2:**

We use cv2 for image processing.

NumPy: Mainly NumPy is used for dealing with arrays. Here the images that we use are stored in the form of arrays. So for that, we use NumPy.

easy: easy is a module used for GUI programming in python. In our application easy is used to open the file box to upload images from the local system.

Image: It is a python library that reads and writes images.

Matplotlib: Matplotlib is used for visualization purposes. Here we plot the images using matplotlib.

OS: Here our application is used for dealing with paths like reading images from the path and saving the image to the path.

Tkinter: Tkinter is a standard Graphical User Interface (GUI) package.

Chapter 3
Project Objective

The objective of a project to "Cartoonify" images can vary depending on the specific goals of the project, but here some common objectives are:-

To create a fun and engaging user experience: Cartoonifying images can be a fun and entertaining way to engage users, particularly in applications that allow users to upload their own photos and see them transformed into cartoons.

To create unique and interesting visual content: Cartoons can be visually appealing and can be used to create unique and interesting content for a variety of purposes, such as marketing materials, social media posts, or website graphics.

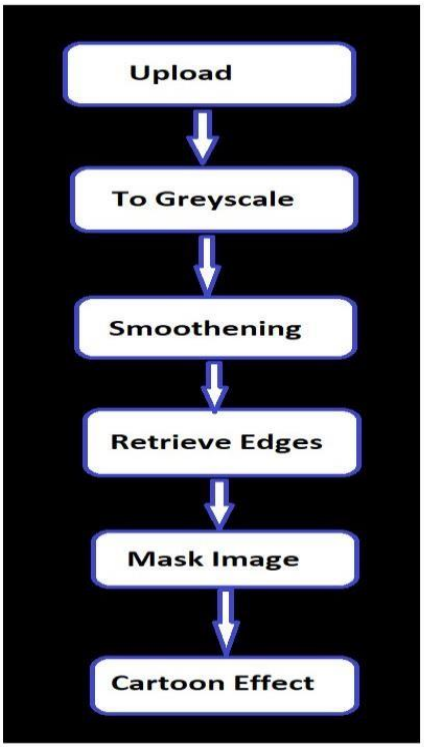
To explore image processing techniques: Cartoonification of images involves using image processing techniques to manipulate the pixels in an image. A project to cartoony images can provide an opportunity to explore different image processing algorithms and techniques.

To improve image recognition accuracy: In some cases, the carnification of images can help to improve the accuracy of image recognition algorithms. For example, in facial recognition applications, cartoon images can help to reduce the impact of variations in lighting, pose, and expression on the accuracy of the recognition system.

To develop a tool for artistic expression: Cartoonification of images can be used as a tool for artistic expression, allowing artists to create unique and stylized versions of real-world images. A project to cartoony images can provide an opportunity to develop new techniques for stylization and artistic rendering

Chapter 4

PROPOSED METHODOLOGY



This is the methodology that we are going to follow to build our cartoonify application. First of all using easygui, we will upload the image, and then the image is converted to a greyscale image.

The next two steps are the important steps to converting images into cartoon images. They are smoothening and then retrieving the edges. In this color of the image is smoothened to give the cartoon look and then we retrieve the edges and then highlight them in the final image.

Next, we will prepare a mask Image. In this, we use the bilateral filter with removes the noise and smoothen it to some extent. Now the final step is giving the cartoon effect. To the image which we got in the previous step, we combine our two important steps and finally give a mask-edged image that looks like a cartoon image.

Chapter 5

Implementation and Result

Cartoonifying an image involves converting a regular photograph into a cartoon-style image. This can be achieved through a combination of image processing techniques, including edge detection, color reduction, and stylization. Here are the steps for designing and implementing a cartoonify image algorithm :-

Image pre-processing: the first step is to read in the image and convert it to grayscale. This will make it easier to detect edges and reduce color information.

Edge detection: use an edge detection algorithm to identify the edges in the image. The canny edge detector algorithm is a popular choice for this step.

Color reduction: the next step is to reduce the number of colors in the image. This can be done using techniques like k-means clustering or simply by reducing the color depth of the image.

Stylization: finally, the image can be stylized to give it a cartoon-like appearance. This can be done by adding thick outlines to the edges, applying a posterization effect, and/or adding shading to the image

Cartoonify image is a technique used to transform a regular image into a cartoon-style image, which typically involves simplifying the image and reducing its color palette. There are various ways to achieve this, but one popular

method is to use deep learning models, such as convolutional neural networks (CNNs), to learn the mapping from the original image to the cartoon-style image.

The result of cartoonifying an image depends on the specific implementation and parameters used. Generally, the cartoon-style image will have fewer colors, sharper edges, and a more simplified appearance compared to the original image. Some implementations may also include other stylizations, such as adding textural effects or modifying the lighting.

In terms of applications, cartoonify image can be used for a variety of purposes, such as creating comic strips, animations, or even as a fun way to edit personal photos. It can also be used in computer vision tasks, such as object recognition, as the simplified and stylized features may make certain objects easier to detect.

However, there are limitations to cartoonify image. Depending on the implementation, the resulting cartoon-style image may not accurately capture all the details of the original image, which may be important in certain applications. Additionally, if the training data used to train the deep learning model is biased or limited, the resulting cartoon-style images may be inaccurate or unrealistic.

Overall, cartoonify image is a useful technique for creating stylized images, but care must be taken to ensure that the resulting images are appropriate for the intended application.

Chapter 6
Conclusion and Future Scope

In conclusion, cartoonify image is a powerful technique for transforming regular images into cartoon-style images. It can be used for a variety of applications, including creating comic strips, animations, and stylized personal photos, as well as in computer vision tasks. However, the accuracy of the resulting cartoon-style images may depend on the specific implementation and training data used.

Looking to the future, there are several potential directions for research and development in cartoonify image. One area of focus could be on improving the accuracy and realism of the resulting cartoon-style images, by incorporating more sophisticated deep learning models and training data. Additionally, there is potential for combining cartoonify image with other image processing techniques, such as image segmentation and object detection, to create more advanced applications.

Another area of future research could be on developing new applications for cartoonify image, such as in the fields of virtual reality and augmented reality. For example, cartoonify image could be used to create stylized environments or avatars in virtual reality games, or to enhance the visualization of data in augmented reality applications.

Overall, cartoonify image is a promising area of research with numerous potential applications, and its continued development could have a significant impact on various fields.

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