CARTOONING WITH ML

Team: Silent Turtles

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PROJECT STATEMENT

Upcoming generation is a bit different. The new generation of children wants to scrutinize almost everything. With so many queries popping in children's mind, the conventional scheme of teaching flops. This presents the need for new techniques for teaching. Sometimes, this is achieved through the use of cartoons or comic strips. Cartoons have proven themselves to be very advantageous for educating children. Nowadays almost everyone is registered in social networks. We keep online status updated every day, share photos and comments, follow our friends' news. To have a nice profile is a matter of prestige. We can use a photo of our own in a profile image, create an amusing avatar or turn our photo into a cartoon. With a pool of web applications available online, an image conversion to cartoon takes few clicks and one example is snapchat .So image cartooning is importance in this modern time. Doing this project, our main challenges was having problems in computational hardware and time consuming because different content images may produce slightly different styled images.

COURSE DETAILS

Machine Learning and Data Mining Lab (CSE-4212)
Course Teacher: Md Mynoddin
Lecturer, Dept. CSE, RMSTU

INTRODUCTION

In the era of modern technology , computer vision achieved a great success. IMAGE PROCESSING is a core part of computer vision which helps us transform and manipulate images and extract information from them. This information is stored in the form of data.
Python is one of the widely used programming languages for this purpose since it has many libraries which can directly be used to pre-process images efficiently. Using Python programming we can use a few computer vision libraries.
For this project we use Python libraries like OpenCV, NumPy.
The basic concept of this project is to convert RGB into its accurate, cartoon image with multiple filtrations or blurred image with proper edge detection

APPROACH

We propose to use neural style transfer which is a machine learning algorithm, which involves two images, first is the input
image from the user and second is the style image which is used to apply the style on the input image.
To run this project, we need the 64bit system and we need to install Pycharm of recent version software. After installing the software, we need to install following libraries
i- Pip install NumPy. ii - Pip install open cv2

RESULTS

The process to create a cartoon effect image can be initially branched into 2 divisions – 1) To detect, blur and bold the edges of the actual RGB color image. 2) To smooth, quantize and the conversion of the RGB image to grayscale. The results involved in combining the image and help achieve the desired result which are:

1. 1 Identifying the Edges
2. Colors to the RGB Image

Figure 1. input.

Figure 2. identifying edges

Figure 3. output

CONCLUSIONS

Image processing has gained vital name and recognition among researchers because of their frequent look in varied and widespread applications within the field of various branches of science and engineering.As an example, image processing is helpful to issues in signature recognition, digital video processing, Remote Sensing and finance. Firstly, we use high-resolution pictures as input. Secondly, we use OpenCV image processing functions to implement image pre-processing. Thirdly we use cv2 libraries because of their blur image edges

FUTURE WORK

We were able to convert a real image into a cartoon with the help of libraries in Python. In future we will add the application of a Generative Adversarial Network (GAN) called Cartoon GAN will be used for the styling real-world images that use 2 loss functions namely, content loss and adversarial loss for getting a sharp and clear image. With the help of GAN, it is possible to convert video as well to its cartoonized version and the development of the project shows that our Proposed Idea provides high quality cartooned images.

REFERENCES

1. https://pub.towardsai.net/an-insiders-guide-to-cartoonization-using-machine-learning-ce3648adfe8