**PROJECT ON DATA SCIENCE WITH PYTHON**

**ANAYSIS ON CARTOONIFY THE IMAGES**

**WHAT IS CARTOONIFY THE IMAGES?**

Carttonify the images means,it turns photo into a cartoon drawing and it uses a neural network to turn your uploaded photo into a unique cartoon

Turn Photos into Cartoons using Python :

You can give a cartoon effect to a photo by implementing machine learning algorithms in python.

There is a libraray called OpenCv , which provides a common infrastructure for computer vision applications and has optimized – machine – learning algorithms.

This library used to recognize objects,detect and produce high-resolution images.

To create the cartoon effect ,we have two things are edge and color palette.

To adjust the components , there are 4 steps :

**1.Load Image:**

In first step,we load or upload the image , define a function , which includes cv2\_imshow to load our selected image.

**2. Create Edge Mask:**

A cartoon effect should contain the thickness of the edge in an image , we can detect the edge in an image by using the cv2.adaptiveThreshold() , in that function we transform the image into grayscale.

Then , we reduce the noise of the blurred grayscale image by using cv2.medianBlur

And then apply adaptiveThreshold function , and define the size of the edge. A larger size means the thicker edges that will be highlight in the image.

After defining the function , call it and see the result.

**3.Reduce the Color Palette:**

A drawing has fewer colors then a photo . Therefore , we use color quantization.

To do color quantization , we apply “K-Means clustering algorithm” which is also provided by OpenCv library.

We can adjust the “K” value to determine the number of colors that we want to apply to the image.

After doing color quantization , we can reduce the noise of the image by using a “bilateral filter” . It would give a little blurred and sharpness – reducing effect to the image.

**4.Combine Edge Mask with the Colored Image:**

The final step is combining the edge mask that we created earlier, with the colored- processed image.

To do that we use “cv2.bitwise\_and “ function.

And we can see the “cartoon – version” of the original photo..

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