Project Synopsis

ON

"Cartoonify Image With QR Scanner"

(using Python and Machine Learning)

Department of Computer Science & Application

Institute of Engineering & Technology

Under the Supervision of-

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Submitted by: -

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ACKNOWLEDGMENT

It gives us a great sense of pleasure to present the synopsis of the B.Tech mini project (**Cartoonify Image**) undertaken during B. Tech III Year. This project is going to be an acknowledgment of the inspiration, drive, and technical assistance that will be contributed to it by many individuals.

I owe a special debt of gratitude to **Mrs.RuchiTalwar(Assistant Professor Department of CEA),** for providing me with an encouraging platform to develop this project, which thus helped in shaping my abilities towards a constructive goal, through her constant support and guidance to our work.

Her thoroughness and perseverance have been a constant source of inspiration for me. I believe that she will support me with all her experienced ideas and insightful comments at different stages of the project & also teach me about the latest industry-oriented technologies.

I also do not like to miss the opportunity to acknowledge the contribution of all department faculty members for their kind guidance and cooperation.

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Cartoon effect
using
OpenCV
Python project

ABSTRACT

The project aims to put forward a solution for transforming images into animated photos(Cartoon Images). The earlier method of transformation requires complicated computer graphics and skills. The idea of the project is based on designated images that are converted into an art form such as painting. Cartoonify seeks to leverage the existence of the Opencv2 library.

It's a kind of signal process within which the input is a picture and the output might be an image or characteristics/features related to that image. Image process tools include OpenCV, Scikit Image, and Numpy.

The algorithm is designed to provide artistically and comically appealing results on a wide range of pictures as possible, although it is conceded that not all inputs yield equally satisfying results. Edge detection and the concept of filters have been used. Matplotlib (library) is used for visualization and plotting. Thus it is imported to form the plot images. This work can be extended to real-time video in the future. An additional feature is added is that we can scan the output image through QR Code.

TABLE OF CONTENTS

INTRODUCTION

In this, we will build one interesting application that will cartoonify the image provided to it. To build this cartoonifyer application we will use python and OpenCV. This is one of the exciting and thrilling applications of Machine Learning. While building this application we have used various libraries. 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.

The algorithm is designed to provide artistically and comically appealing results on a wide range of pictures as possible, although it is conceded that not all inputs yield equally satisfying results. Edge detection and the concept of filters have been used.

Original Image

Animated Image

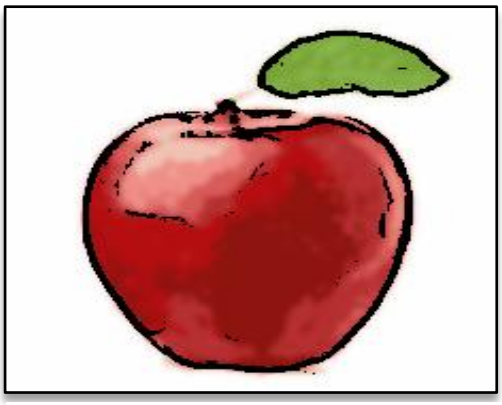
SOME EXAMPLES OF THIS PROJECT

Partially cartoonify image

Original image

Fully cartoonify image

Original image



Animated image

OpenCV: Python is the pool of libraries. It has numerous libraries for real-world applications. One such library is OpenCV. OpenCV is a cross-platform library used for Computer Vision. It includes applications like video and image capturing and processing. It is majorly used in image transformation, object detection, face recognition, and many other stunning applications.

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, OpenCV is playing a major role in the field of technology. Using OpenCV we can process images and videos for some tasks like object detection, face detection, object tracking, and all.
OpenCV has c, c++, java, and python interfaces and it supports all kinds of systems such as Windows, Linux, Android, Mac OS, IoS, and all.

THE PROCESS USED FOR CARTOONIFY THE IMAGE

Step 1: Importing the required modules:

OpenCV, Numphy, OS, MATPOLIB

Step 2: Building a File Box to choose a particular File

Step 3: Transforming an image to grayscale

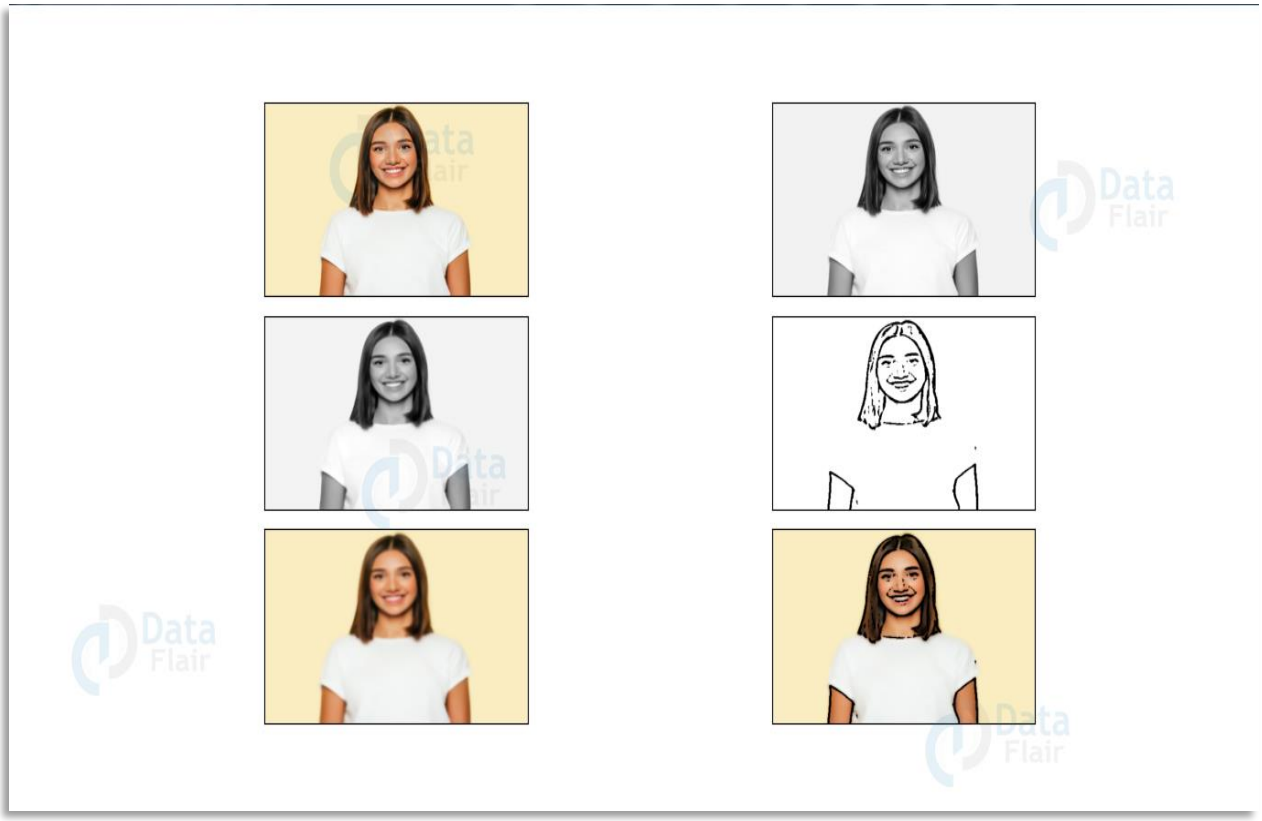
Step 4: Smoothening a grayscale image: using MedianBlur() function

Step 5: Retrieving the edges of an image
The cartoon image has highlighted edges and
and smooth and light color

Step 6: Preparing a Mask Image
The lightened colour image that we mask with edges at the end produces a cartoon image. We use a bilateral Filter which removes the noise.

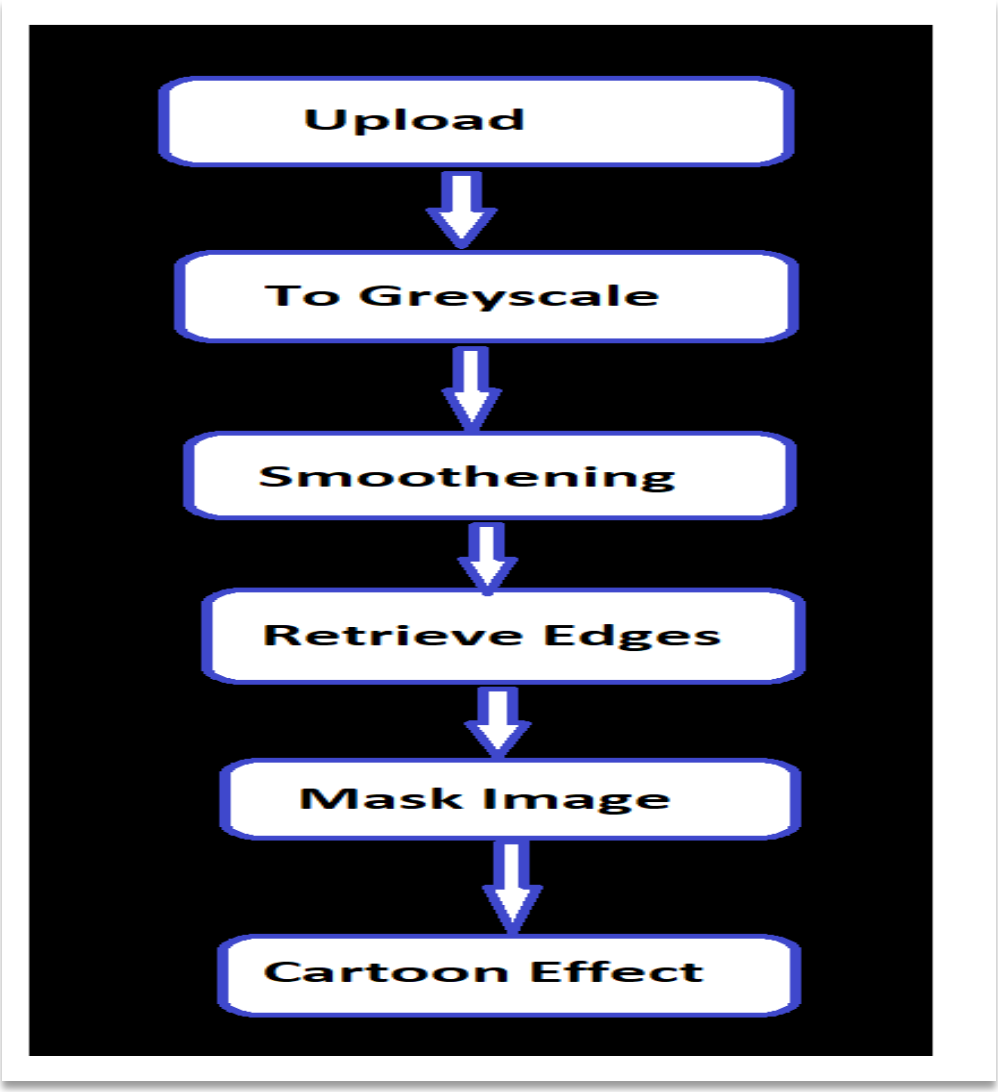
Step 7: Giving a Cartoon Effect

This will be done using MASKING. We perform bitwise and on two images to mask them and by QR Code Scanner we can scan that image



All stages to process the image into a cartoon image

FLOW CHART



Technology Used :

A. Image Processing
B. Python & Machine Learning

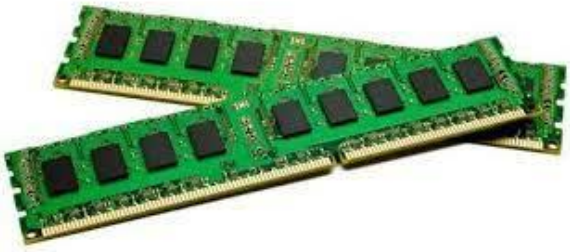
A) **Software Requirements(Minimum):**

Windows 7,10,11 (any)
Python 3.7
Python Modules

1. OpenCV2
2. OCR
3. Numpy

B) **Hardware Requirements(Minimum):**

1) Processor: i3 processor-based computer or further
2) Storage: 4GB Ram
   5 GB Hard Disk Space
3) Device: Laptop or desktop (any)



MOTIVATION

The idea behind choosing this project was to create a cartoon from a picture. This project includes areas of vision (object recognition) and cartoonification. This was thought to be a step in helping the children to better understand and appreciate cartoons. Cartoons seem to be very familiar to children so they can relate to them.

FUTURE PROSPECTS

Currently, many systems are facing issues with face cartoonization. This can be improved by providing more facial data with different perspectives to the model. The resolution of the output also needs to be increased. In the future, we can apply these methods on the video to create a cartoon video. Social media is extensively used these days. We keep our online status updated every day, share photos and comments follow our friends' news. To have a nice profile is a matter of prestige. You can use a photo of your own in a profile image, create an amusing avatar or turn your photo into a cartoon. With a pool of web applications available online, image conversion to a cartoon takes a few clicks.

REFERENCES:

- https://realpython.com/tutorials/advanced/
- https://data-flair.training/blogs/cartoonify-image-opencv-python/
- https://www.geeksforgeeks.org/best-python-libraries-for-machine-learning/
- https://colab.research.google.com/ (platform used)

BOOKS:

- https://www.javatpoint.com/digital-image-processing-tutorial
- Deep learning with python and OpenCV by Viral Thakar

ONLINE GITHUB REPOSITORY:

https://github.com/ManaliSahu-17

FACULTY GUIDELINES:

Mrs. Ruchi Talwar,(Assistant Professor at GLA University)