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REAL TIME VIDEO CARTOONIZATION USING GAN BASED ON MACHINE LEARNING

Mr.D.Tony Caleb [1] Dr.R.Josphineleela [2] Dr.S.Suma Christal Mary[3]

Akshayaa Venkatesan[4] Janani.P [5] Sowmiya M [6]

[1]CEO - AICL Technologies ,[2] Professor & Head Department of Information Technology

[3] Associate Professor [4,5,6] UG Scholars in Department of Information Technology,

Panimalar Institute of Technology, Chennai.

sumasheyalin@gmail.com

Abstract - In this paper, we propose a solution to transforming videos of real-world scenes into cartoon style videos, which is valuable and challenging in computer vision and computer graphics. Our solution belongs to learning based methods, which have recently become popular to stylize images in artistic forms such as painting.To convert a real-time video into a cartoonized video.To transform a clip of real world scenes to cartoon style images with high quality.To provide high efficient, significantly outperforming cartoon with the art stylization methods.In this paper, we propose CartoonGAN, a generative adversarial network (GAN) framework for cartoon stylization. Our method takes videos which are splitted to photos and cartoon images for training, which is easy to use. Our method is also much more efficient to train than existing methods. Experimental results show that our method is able to generate high- quality cartoon images from real-world photos (i.e., following specific artists' styles and with clear edges and smooth shading) and outperforms state-of-the-art methods.

I. INTRODUCTION

An cartoon is a kind of representation, now and then energized, ordinarily in a non-practical or semi-sensible style. The particular importance has advanced over the long run, yet the cutting edge use normally alludes to either: a picture or arrangement of pictures proposed for parody, exaggeration, or humor; or a film that depends on a succession of representations for its liveliness. Kid's shows are a masterful structure generally utilized in our day by day life. Not with standing masterful interests, their applications range from distribution in printed media to narrating for youngsters' schooling. Like different types of works of art, numerous acclaimed animation pictures were made dependent on genuine world scenes. In any case, physically reproducing genuine world scenes in animation styles is difficult and includes generous masterful abilities. To acquire great kid's shows, specialists need to draw each and every line and shade each tone area of target scenes. Then, existing picture altering programming/calculations with standard highlights can't deliver good outcomes for cartoonization.

II. EXISTING SYSTEM

Existing methods do not produce satisfactory results for cartoonization, due to the fact that

(1) cartoon styles have unique characteristics with high level simplification and abstraction, and

(2) cartoon images tend to have clear edges, smooth color shading and relatively simple textures, which exhibit significant challenges for texture-descriptor- based loss functions used in existing methods.

III. PROPOSEDSYSTEM

From the point of view of PC vision calculations, the objective of animation stylization is to map videos in the photograph complex into the animation complex while keeping the substance unaltered. To accomplish this objective, we propose to utilize a committed GAN-based design along with four basic yet powerful misfortune capacities.

The fundamental commitments of this project are:

(1) We propose a committed GAN-based methodology that successfully takes in the planning from genuine videos to animated videos utilizing unpaired picture sets for preparing. Our strategy can create top notch adapted kid's shows, which are considerably in a way that is better than cutting edge strategies. At the point when animation pictures from singular specialists are utilized for preparing, our strategy can repeat their styles.

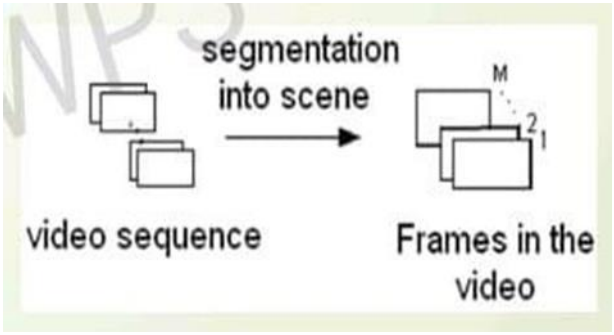
(2) We give the input video into a pre processor and break the genuine videos into n- number of images using frame separation . Each frame is about 30fps and the each frame has a image which is to be animated individually.

IV. ARCHITECTURE

A generative adversarial network (GAN) is a class of machine learning frameworks. The key idea of GAN model is to train two networks (i.e, ag generator and discriminator). Steps in GAN are as follows: The separated frames are given into the GAN model. Each frame is iteratively processed and trained with random noises in Generator. After getting losses the discriminator and Generator gets trained perfectly as cartoon .Finally a cartoon image is obtained. The video is divided into images using frame separation. In video and animation, frames are individual pictures in a sequence of images. For example we play 12 frames per second, creating the appearance of motion.

4.1 Video preprocessing

In frame separation, the first step involves import and read the video Extract frames from it A Save them as images.



In frame separation, the first step involves import and read the video Extract frames from it A Save them as images

. 4.2 video preprocessing

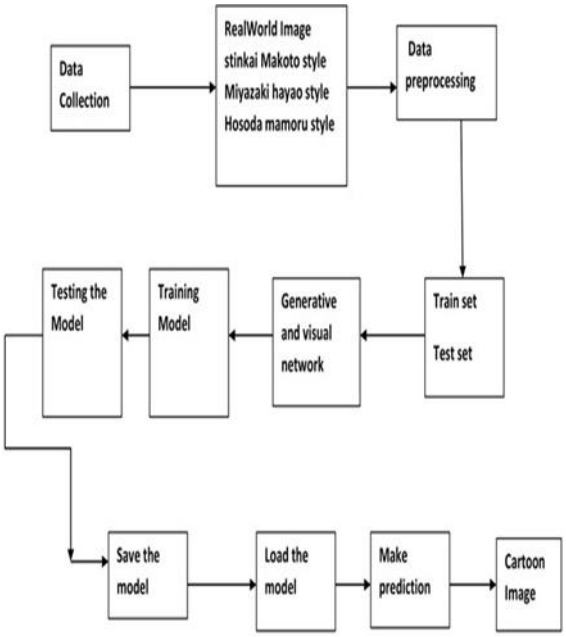
The trained and tested datasets are given to GAN model which trains the model .Generator -GAN is used to map input images to the cartoon manifold. Discriminator -GAN is used to judge whether the input images is a real cartoon image.

4.3 Video serving

Each cartoon frames are sent into the processor and made as a video stream. The converted video is streamed to the user as a output.

4.4 Frontend-UI

The video is displayed through a frontend page.



V. HARDWARE AND SOFTWARE SPECIFICATION

5.1 HARDWARE REQUIREMENTS

•AMD based processor at least 3.6 Ghz with 6+ cores.

•NVidia 1080Ti

5.2 SOFTWARE REQUIREMENTS

Anaconda

Python 3.6

TensorFlow 2.0

Alpha Tqdm

Imageio

Tb-nightly

VI. CONCLUSION:

The GAN is able to learn a model that transforms video of real world scenes to cartoon style video with high quality and high efficiency.One of the best things about GANs is that they generate data that is similar to real data.Because of this, they have many different uses in the real world. They can generate images, text, audio, and video that is indistinguishable from real data

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