Deep Fake Face Animation Cloning

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Abstract— Deep fake face animation is a model where we will be giving the image life, here we are using unsupervised learning methodology, here we will be converting our image to a cartoonized image and we will be giving life for the cartoonized image with the help of a driver video. once when we have trained a set of data images of cartoon and videos objects of its same category of a human face , our method will be applied for any object of this classes , By matching the facial key points it will detect the facial areas of both the source image as well as driver video, and it will gives us the final generated cartoonized video, where our cartooned image will acts as our driver video, this makes the animation cheaper and this model is very interactive for the users.

Keywords: Toonify, Cloning, Style GAN, Key Point, Animation

I. INTRODUCTION

Deep fake face animation is a virtual animation creativity for giving the images fake facial movements and toonify the images using the First Order Motion Method and styleGAN, this model was created by the inspired model of facial cloning after the release of avatarify application. here our model was developed to inspire the people and to get more attention to this model I have created this model, which is interactive and joyful. Here first we are going to insert a image that will be our source file and with our collected cartoon dataset it matches all the facial keypoints and it selects the cartoon image which matches the keypoint which has been detected and both will be merged and the model will trim the face as the cartoon character and finally it gives the cartooned image .after this execution the cartooned image will act as the source file and with that image we need to insert a video file that is the (driver file), now both this source file as well as driver file will be inserted and it goes through some keypoint detection after it detects both the image and the video , the output should be that the source file should act as a driver file so we will get a cartoonized face animation cloning with deep-animator. This is a deep fake clone method used with the knowledge of yaml key points using unsupervised neural networking. Using deep learning technique in machine learning.

II. RELATED WORKS

A. First Order Motion:

[7] Picture activity comprises of producing a video grouping so an article in a source picture is energized by the movement of a driving video. Our structure tends to this issue without utilizing any explanation or earlier data about the particular item to vitalize. When prepared on a bunch of recordings portraying objects of a similar classification (for example faces, human bodies), our technique can be applied to any object of this class. To accomplish this, we decouple appearance and movement data utilizing a self-regulated detailing. To help complex movements, we utilize a portrayal comprising of a bunch of learned keypoints alongside their nearby relative changes. A generator network models impediments emerging during objective movements and joins the appearance extricated from the source picture and the movement got from the driving video.[7]

Fig. 1: (image)

In this fig.1 we can see that there is a source life and a driving file, here the source file is acts as the driving file. this is an example of First order motion model.

B. StyleGAN2:

[10] StyleGAN2 is a cutting-edge network in producing reasonable pictures. Additionally, it was unequivocally prepared to have unraveled bearings in idle space, which permits effective picture control by differing dormant components. Altering existing pictures requires inserting guaranteed picture into the inactive space of StyleGAN2. Dormant code improvement through backpropagation is regularly utilized for subjective inserting of genuine world pictures, in spite of the fact that it is restrictively delayed for some applications. this style GAN are used to give the image a high-resolution effect to the images, same as StyleGAN2 which is still better than StyleGAN.[10]

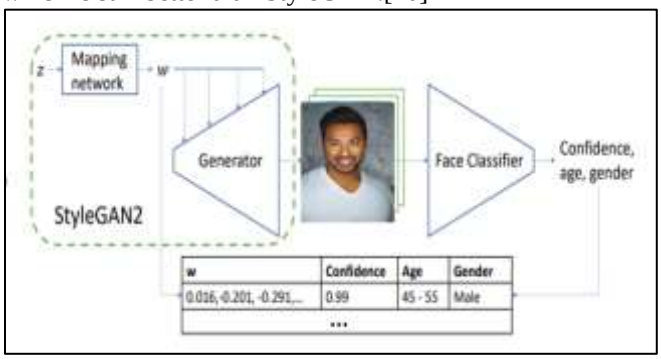

Fig. 2: functional Architecture

C. Cartoon GAN:

[4]animation styles have extraordinary qualities with undeniable level rearrangements, deliberation and animation pictures will in general have clear edges, smooth tone concealing and moderately straightforward surfaces, which show critical difficulties for surface descriptor-based misfortune capacities .here in this method a image will be inserted and with that there will be a cartoon image both the

files will be matched through facial keypoints detection and it will generate a cartooned image. [4]

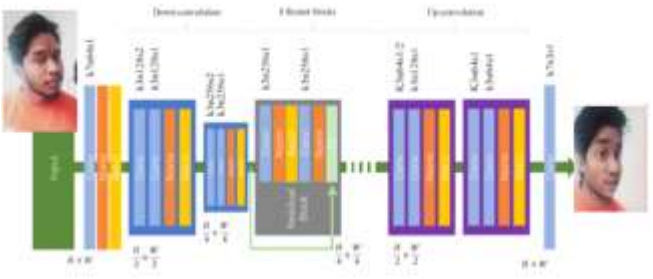

Fig. 3: (functional architecture)

In this fig.2 we can see that we are inserting a image this image will go through many stages and it will match our image to the trained cartoon data image, it will check the facial keypoints and it is giving a cartoon generated image. similar to the input image as well as the cartoon image.

III. LITERATURE SURVEY

[1]The author depicts the cycle and the innovation utilized in the formation of a computerized clone of a human face for a story National Geographic to delivering a human face for a story on skin. The test is duplicate the presence of a face given a 3D model.[2] The author present architectures based on deep neural nets for gesture recognition in videos, which are invariant to local scaling. We amalgamate autoencoder and predictor architectures using an adaptive weighting scheme coping with a reduced size labelled dataset, while enriching our models from enormous unlabeled sets. We further improve robustness to lighting conditions by introducing a new adaptive filer based on temporal local scale normalization. We provide superior results over known methods, including recent reported approaches based on neural nets.[3] In this paper the author propose utilizing a Convolutional Neural Network (CNN) to learn safe driving conduct and smooth directing moving as a strengthening of self-ruling driving advances. The preparation information is gathered from a forward-looking camera and the directing orders gave by an accomplished driver driving in rush hour gridlock just as metropolitan streets. This information is then used to prepare the proposed CNN to work with what we call it social cloning. There proposed Conduct Cloning CNN is named as "BCNet" and its profound seventeen-layer engineering has been chosen after broad preliminaries.

IV. WORKING METHODOLOGY

In this model our main aim is to create an interactive model for our current trend, now in our generation everything is going online including our currency's, so as people are being active day by day they are looking for some innovational new things they need to see, learn, interact, as well as enjoy with that. Now we can see there is many applications such tik-tok, moje, Instagram, snapchat, etc... Who uses may filters as well as interactive models to take attention to their application such that many of them can spend their time with that and they can enjoy including the children's So, based on that I have created an interactive model which is joy full as well as helpful in many fields. Here the project works in the method of first order motion, Cartoon GAN(Generative Adversarial Networks),style GAN(Generative Adversarial Networks).first I used Cartoon GAN and Style GAN , both of this goes an amazing role where cartoon GAN is used to convert a normal image to a cartooned image with the deep fake methodology as well as in the same model the style GAN played an main role where it will be editing the cartooned image by trimming the unwanted facial marks , it gives perfection to the image and more over it gives the image an high quality image effect ,so the image quality will be high and attractive it gives an solid finishing to the image, in another side first order motion model is an extraordinary model where it does an amazing job .here first order motion models main objective is to give the Image life ,with the source file (image file) we need to add a driver file (video.mp4)because by detecting this video file the image needs to act like that driver file with the yaml key point it detects the facial areas it analyse and it gives the final out as the source file acts as the driver file. As this first order motion model will be merged with the CartoonGAN and Style GAN. Here cartoon image will be used as the source file so we will be getting cartoonized facial motion generated output. This is one of the powerful model which can be used in the society with the safer measure and it will be interactive.

V. WORKING FLOW

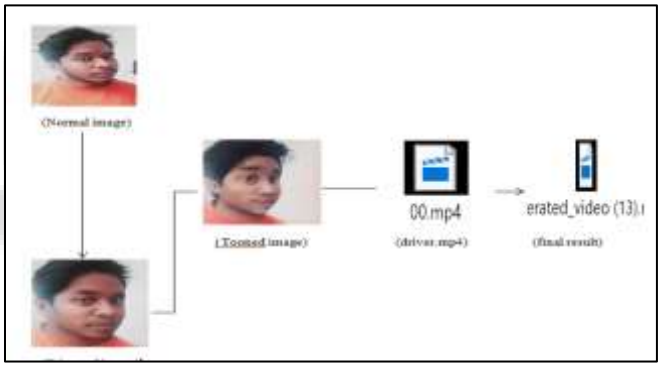

Fig. 4: work Flow

Here in this flow we can see that we have a normal image that is our source file. We are inserting the source file in our model and we have a set of cartoon dataset were our model will analyze the keypoint of the source image and it checks whether there is a matched toon image. After the match it will trim the unwanted facial hairs as well as marks from the source file and it gives us a cartooned source image.

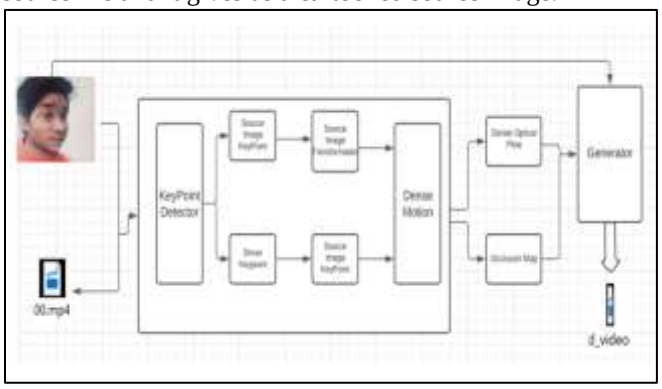

Fig. 5: Functional Architecture

Here in the fig.4 we can see the functional architecture of our model. Here we can see that we have inserted a cartooned image with a driver video file of type mp4 both are been inserted in our model, here our model what it does is that it will go to the keypoint detection phase and it will check for the facial keypoints such as source file keypoint and driver file keypoints .after that it does to the dense motion phase where it compares both facial keypoints and it tries to match the facial motion with the cartoon image. After this it goes to the mapping phase here it merges the drivers keypoint movements to the source file that is our cartooned file. The final phase is our generator phase were our model deliver's a output of the exact cartoonized mp4 video. here we can insert any kind of video file such as, popular person, normal our own video, male and female, or any kind of human reacted videos that should be a facial video. finally, our model generates a cartoonized motion video of our own.

VI. Result and Discussion

I have implemented this model using Cartoon GAN, style GAN and first order motion model. We have 2 parts in our model first one is tooning the source file and we will be using that tooned image as souce file in our second part to run this we will by inserting 2 files one is our normal image and other file will be some tooned image which we needed to convert our image such as that tooned image, This will first generate a trimmed png source file after the match of the cartoon image and it generate a tooned image. After this our second step is to insert the tooned source file ,Here we will be inserting 2 files tooned source image and some driver file which we want our source file to act like that driver video file, after training the source image we are implementing it with driver video and we are able to generate tooned source video which act same as the driver video. Here our main aim of the project was to create a cartooned image with our own image and to give that image life.

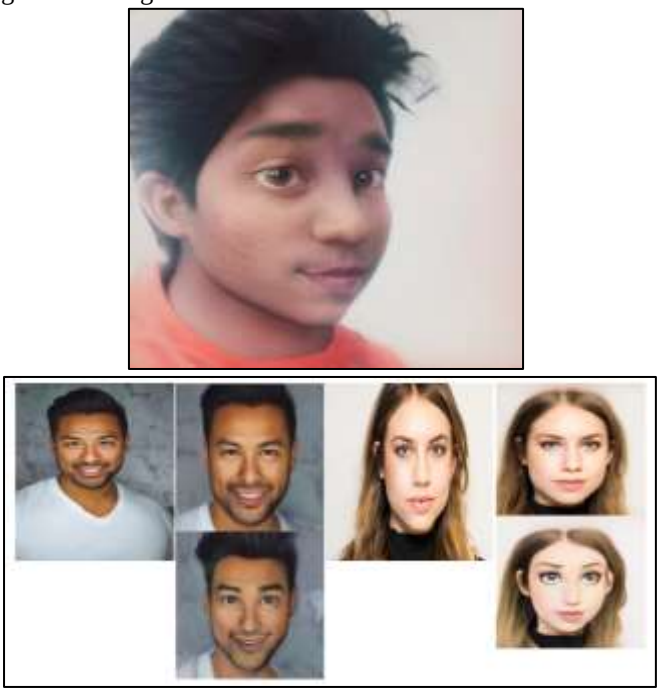

Fig. 6: TOONED IMAGES

here in this fig.6 we can see the cartoonized image which our model generated in the first part from the source image file to the cartooned image file. Now this file will be used as the source file to generate a moveable tooned video.

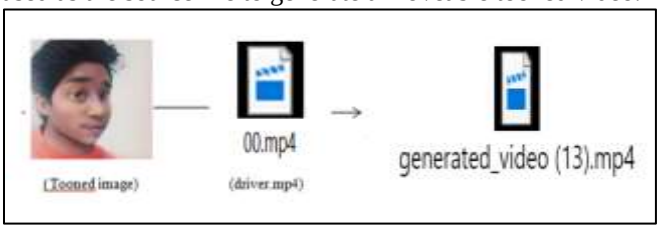

Fig. 7: Final Result

in this fig.6 we can see that we have created a cartooned image now I will be using it as a source image. now I have a selected driver file. both will be inserted in my model and it will generate a cartooned video that is our generated video.mp4.

VII. Conclusion and Future Work

The model will analyse the input source image after that it will trim the image and it will convert to cartoon image and the cartooned image will act as the source file and it will be merged with the driver video .after the merge it will check the keypoints of the face as well as the driver video and It will generate the face motion for the source image same as the video movement including their facial movement such as lip sync ,facial motions and cartooned image so the model will look like semi animation model still more realistic with half human as well as cartooned character which can be realistically identified by the users and interactor's. Expressions and it is working well in this model. In the future I will be swapping both the raw image and the cartoon image and will make it a semi human cartoonized image.

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Bibliography

[1] Jensen, H. W. (2005). Digital face cloning. In ACM SIGGRAPH 2005 Courses (pp. 11-es).
[2] Gupta, O., Raviv, D., & Raskar, R. (2016). Deep video gesture recognition using illumination invariants. arXiv preprint arXiv:1603.06531.
[3] Farag, W., & Saleh, Z. (2018, November). Behavior cloning for autonomous driving using convolutional neural networks. In 2018 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies (3ICT) (pp. 1-7). IEEE.
[4] Chen, Y., Lai, Y. K., & Liu, Y. J. (2018). Cartoongan: Generative adversarial networks for photo cartoonization. In Proceedings of the IEEE conference on computer vision and pattern recognition (pp. 9465-9474).

[5] Aberman, K., Shi, M., Liao, J., Lischinski, D., Chen, B., & Cohen-Or, D. (2019, May). Deep video-based performance cloning. In Computer Graphics Forum (Vol. 38, No. 2, pp. 219-233).
[6] Lou, A., Zhang, C., & Liu, E. Cat Photo-to-Sticker Translation with Deep Learning (Computer Vision, Generative Modeling).
[7] Dade, K. Toonify: Cartoon Photo Effect Application.
[8] Siarohin, A., Lathuilière, S., Tulyakov, S., Ricci, E., & Sebe, N. (2019). First order motion model for image animation. Advances in Neural Information Processing Systems, 32, 7137-7147.
[9] Pinkney, J. N., & Adler, D. (2020). Resolution Dependent GAN Interpolation for Controllable Image Synthesis Between Domains. ArXiv preprint arXiv: 2010.05334.
[10] Viazovetskyi, Y., Ivashkin, V., & Kashin, E. (2020, August). Stylegan2 distillation for feed-forward image manipulation. In European Conference on Computer Vision (pp. 170-186). Springer, Cham.
[11] ECHIZEN, I., BABAGUCHI, N., YAMAGISHI, J., NITTA, N., NAKASHIMA, Y., NAKAMURA, K., & TIEU, N. D. T. (2021). Generation and detection of media clones. IEICE TRANSACTIONS on Information and Systems, 104(1), 12-23.
[12] Gong, J., Hold-Geoffrey, Y., & Lu, J. (2020). Auto Toon: Automatic Geometric Warping for Face Cartoon Generation. In Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (pp. 360-369

