Week 6: Summer Internship

28 June 2021- 4 July 2021

Tasks

The main tasks in this week are as follows:

- Generating deep fakes that are not detectable with naked eye (kaggle like examples).
- Testing the algorithm against the generated deep fakes.
- Look for deep learning algorithms to generate deep fakes by giving custom input images.

Generating deep fakes

1. Used pre-trained model by stylegan for faces and provided seed images to get the corresponding output images.
2. Created a google colab notebook for the same.

Link:https://colab.research.google.com/drive/1z8Q7qWbcWA-SvtfzX_sEqq7agyXpNDPE?usp=sharing

Seed images

Output images

Testing the algorithm

The seed and output were not matching since one output took features (learning by the model) from all the seed images.

Some features match out but overall the image does not seem to be related at all.

Images with people of different age and gender are paired with maximum similarity score.

Algorithm output - 1

Algorithm output -2

Deep learning models for custom deep fake

The model is hungry for images and needs to take a lot of images as input. We could include out 2-3 images in the image dataset but the output would not resemble very much with the original image (as seen earlier).

Google colab notebook link for one such training:https://colab.research.google.com/drive/1sAg9vBwYbgtxJltg_XHScSSjFDP6UG2O?usp=sharing

Source:https://github.com/jeffheaton/present/blob/master/youtube/gan/colab_gan_train.ipynb

Minutes of the meeting - 1

1. Deep fakes are not mainly used in profile cloning. Hence, our code should be targeting morphed/photoshopped images.
2. We thus need to explore some morphing techniques for generating images for profile cloning.
3. We also have to establish that morphing and photoshopping are relevant methods and widely used in profile cloning techniques.
4. We will keep deep fakes into consideration as additional method of generating fake images.

Minutes of the meeting - 2

Our algorithm averages out the similarity score over whole image. If 2-3 features are taken from the same image then the similarity score should be higher than the averaged out score (which is given right now).

The weights are currently uniformly distributed. We could use methods like power law to normalise the score.

We would have to look for similarity score corresponding to each feature and return a list of score to then apply techniques for deciding the weights.

Minutes of the meeting - 3

Overall, the main upcoming tasks are as follows:

1. Modify the code to incorporate the feature level similarity scoring.
2. We have to establish relevance of morphing/photoshopping.
3. Test our algorithm on the outputs of those images.