

Dog GANs

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Abstract

- In this final project, we firstly build a small dataset of Shiba Inu with around 300 images
- Then we explore different GANs to get some reasonable result from this small dataset.

Dataset

The first Part of the dataset are crawled from Flickr with the whole body and different backgrounds. The second part are from the same dog on Ins with only face on images. All the images are manually cropped to 128*128.



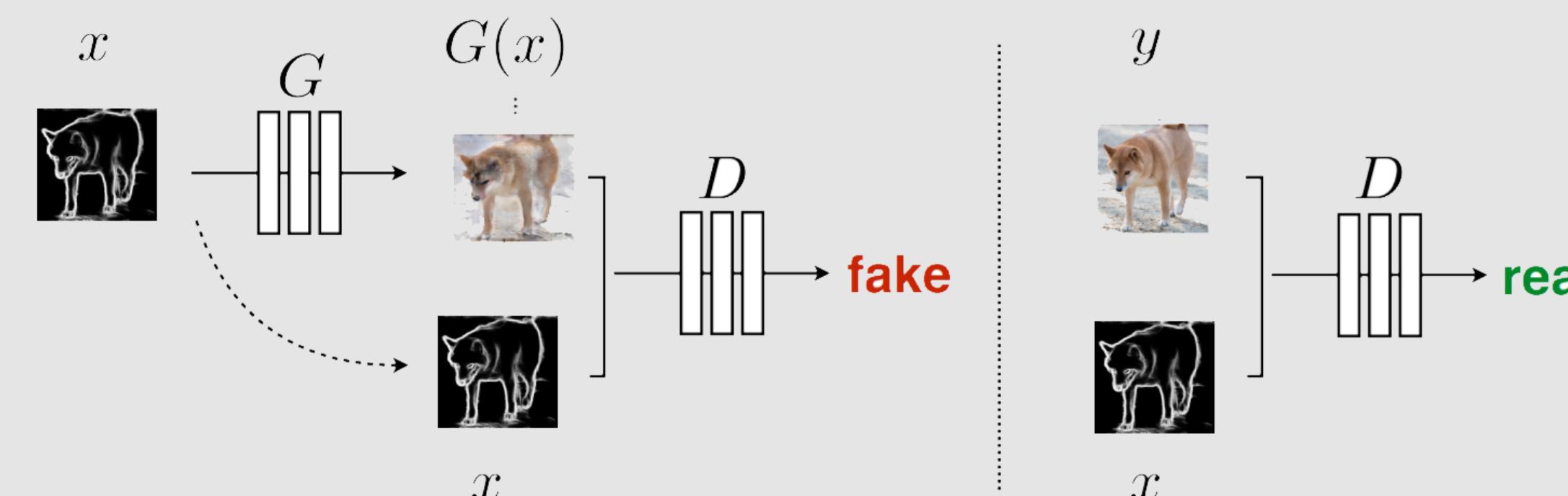
DCGAN

We firstly try a simple DCGAN as a baseline. This GAN can only generate low quality dogs.

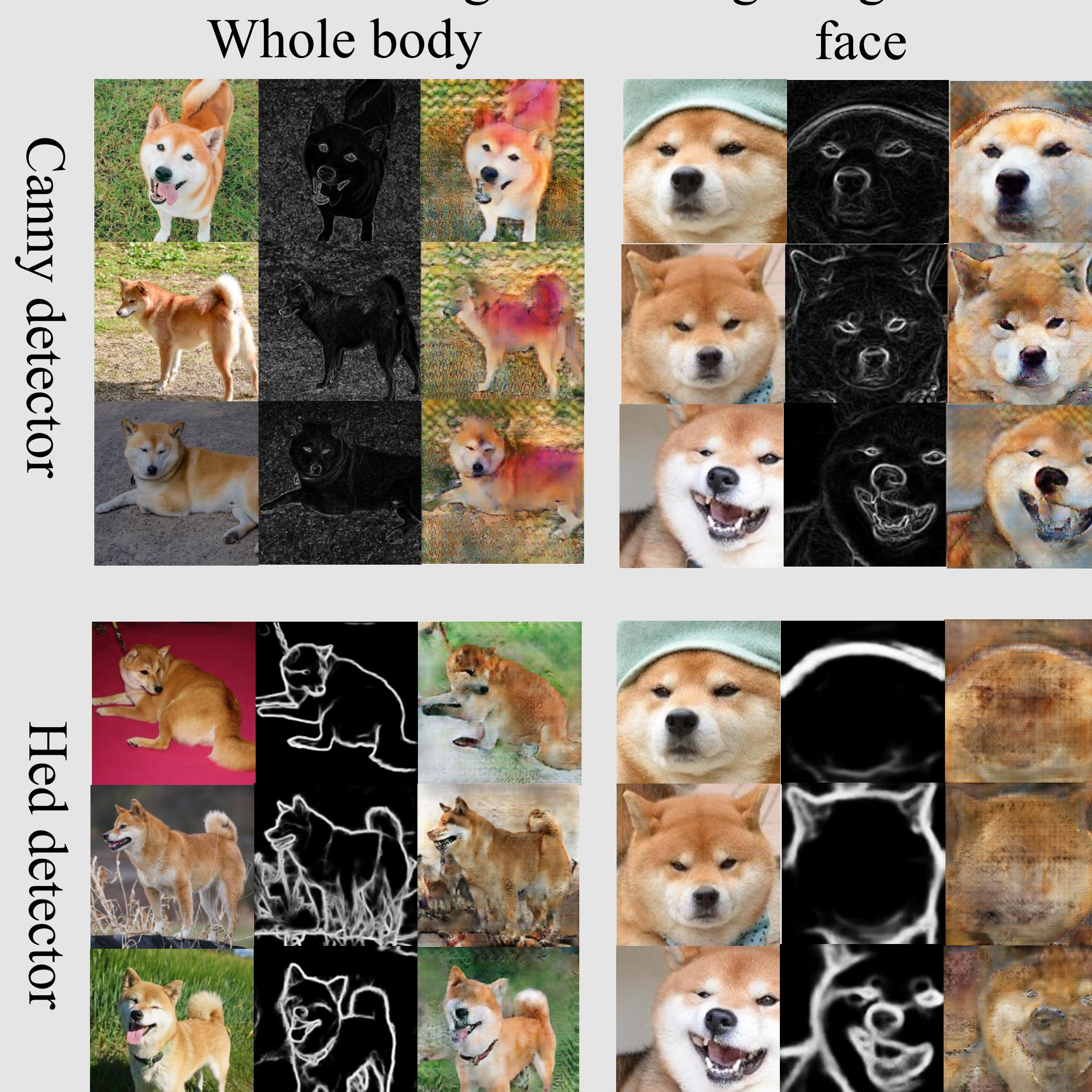


Pix2Pix with Edges

- To make use of our small dataset. One way we can think about is to provide extract information. For example, edges. Network is the same as the original Pix2Pix paper.



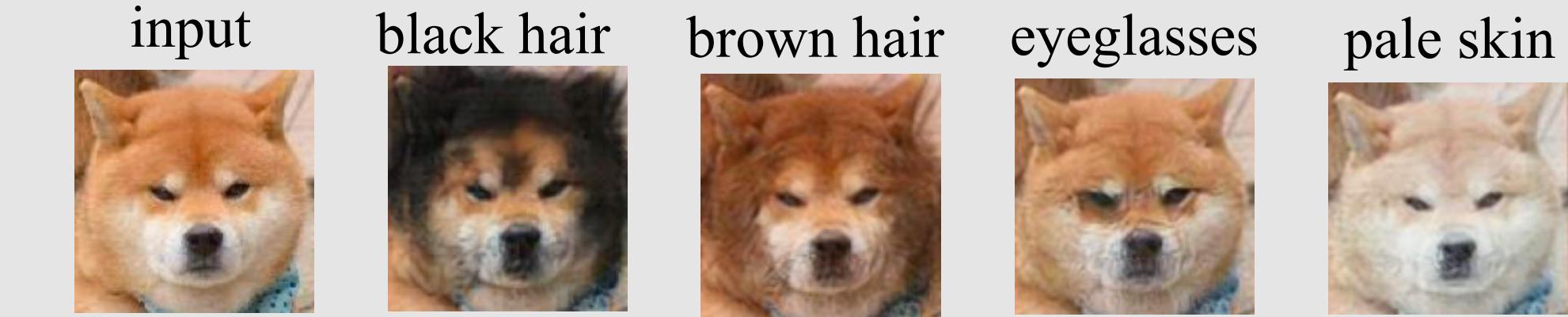
- We try two kind of edge detection methods. One is Holistically-Nested Edge Detection (Hed) used in the original paper. The other one is Canny detector discussed on class.
- Here is some result from different edge detectors and categories of dog images.



Try more out in our demo!

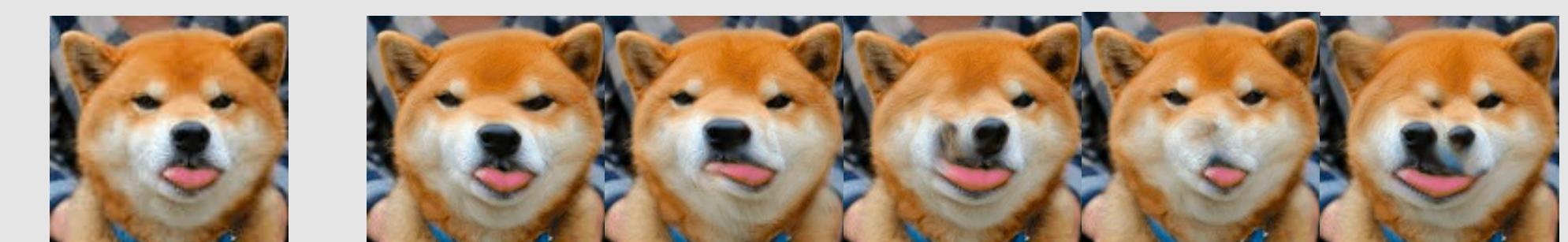
Other GANs

- AttGAN
This GAN is usually used for human facial expression editing. We find that some attributes can be transferred to dogs.



- SinGAN

SinGAN goes to an extreme to train GAN with single image. But we find it doesn't work well on our images. We also try to extend single image to multiple images but see no improvement.



Discussion

- In Pix2Pix, Hed edge detector works well on capturing dog's whole body but misses facial detail. We can try to combine Hed and Canny to produce better pix2pix result
- We get relatively good results from pix2pix but more exploration is needed for other GANs.

References

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