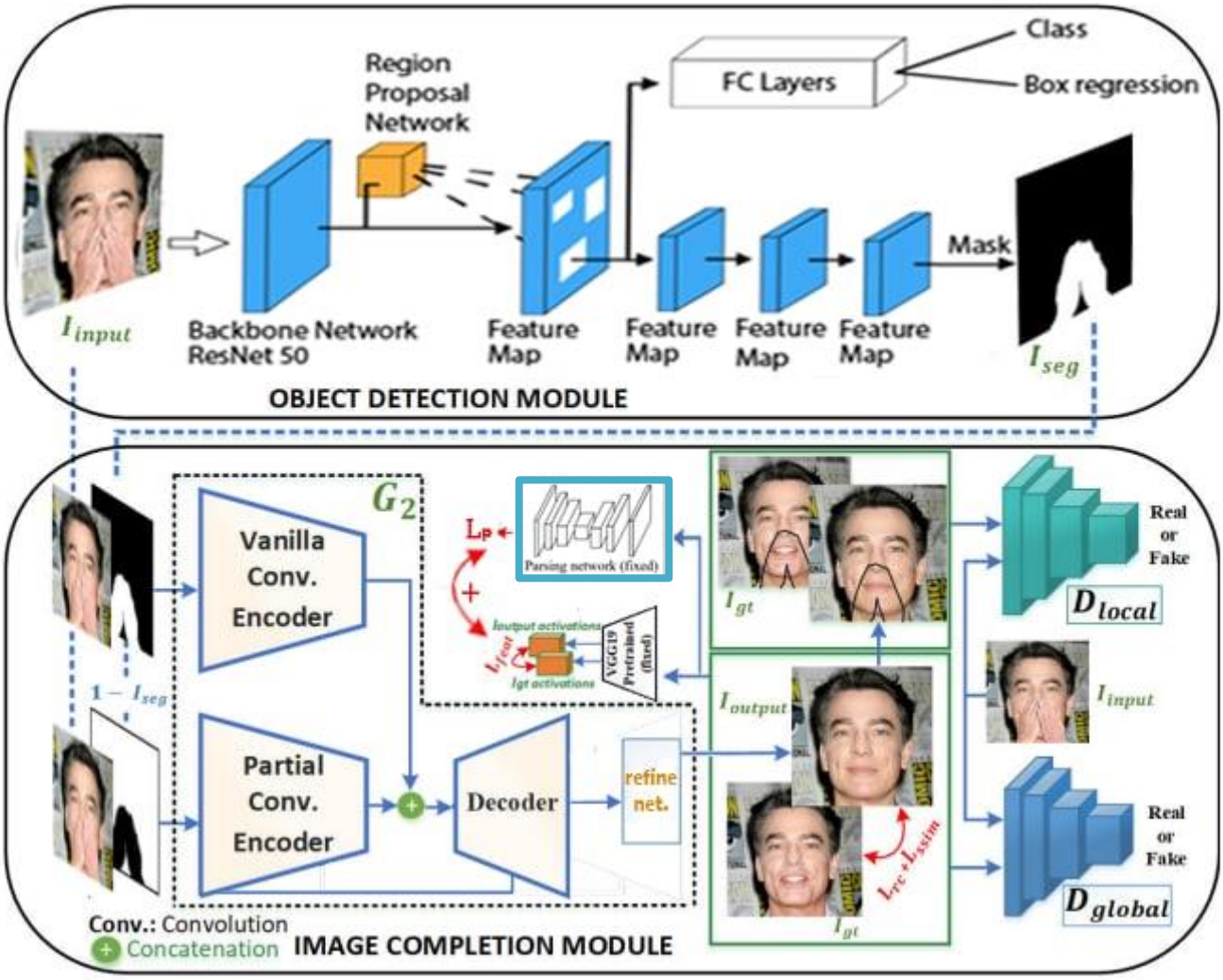
Face Under Mask Reconstruction



[5]

Parsing

we find the global D is not effective in ensuring the consistency of fine details in the generated image.

The main reason that a parsing network was introduced is that a global discriminator is not enough to ensure the consistency of the image considering the details it could give a realistic completion but not identical or close to the unmasked one.

it is used for regularization

segment labels for every main component of the face

it predict the label for each pixel

in the paper it achieved f score of 0.851

improve the quality of face completion

can be improved with hyperparameter tuning

after training the parsing network remains fixed in the generation network framework

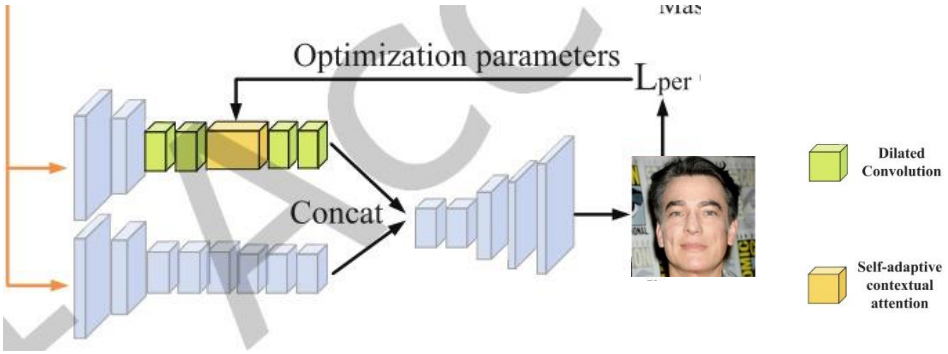
We compare the result of the unmasked face the ground truth with the parsing on the generated faces

The parsing will back-propagate to the generator to regularize face completion

Paper [1].

Refine Network

Input(coarse image)



The attention model was used to borrow and copy all the feature information from background patches which allows us to generate masked patched also allows us to keep the image coherent [4] .

Masked R-CNN

The U-Net is better than the mask R-CNN in image segmentation due to its high performance in feature extraction but can't detect objects well [2] ,the mask R-CNN is better in the object detection which is supported by using Resnet50 to extract more features from the image [3] .

The Resnet50 extract both low level and high-level information from a picture.

The aim of a Region Proposal Network is to predict if an item is present in a given area or not.

Mask R-CNN can also estimate human poses as well as instance segmentation and bounding box object detection

The additional part on faster R-CNN is a branch for predicting segmentation masks(FCN) on each Region of Interest (RoI) which predict a segmentation mask in a pixel-to pixel manner , that's in parallel with classification and bounding box [3].

References:

[1] Generative Face Completion

[2] MASK-RCNN AND U-NET ENSEMBLED FOR NUCLEI SEGMENTATION

[3] A Deep Learning Framework to Reconstruct Face under Mask

[4] Toward High-quality Face-Mask Occluded Restoration

[5] Effective Removal of User-Selected Foreground Object From Facial Images Using a Novel GAN-Based Network