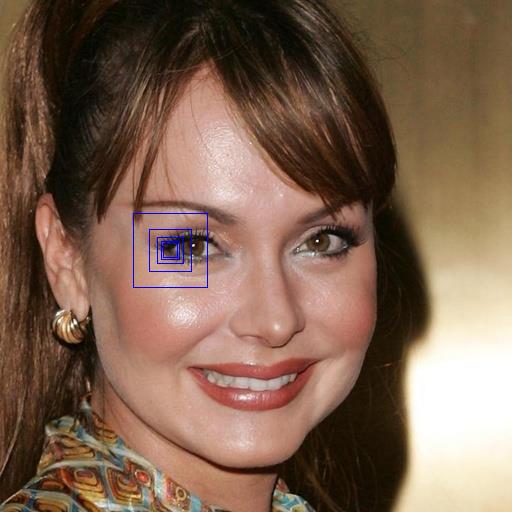
* T-SNE
  + Light red: add hair
  + Blue: add new part
  + Green: cheek shape
  + Purple: eyebrow
  + Orange: eye shape
  + Yellow: eye size
  + Dark red: hand-drawn without marker
  + Pink: mouth
  + Grey: nose shape
  + \* stands for baseline

Observation –XuejinChen:

Binxin Yang

* Reception field



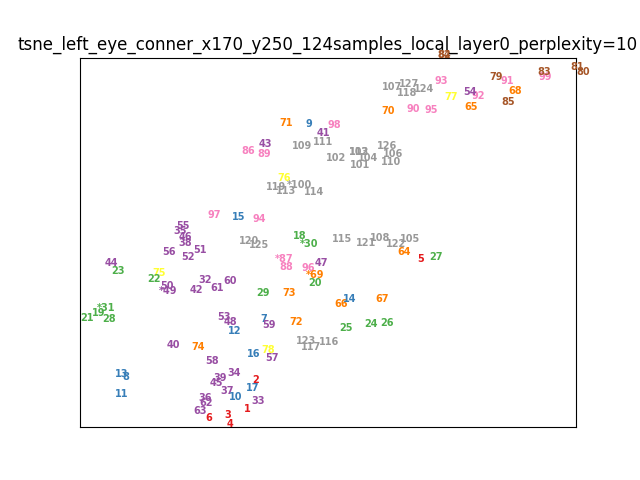
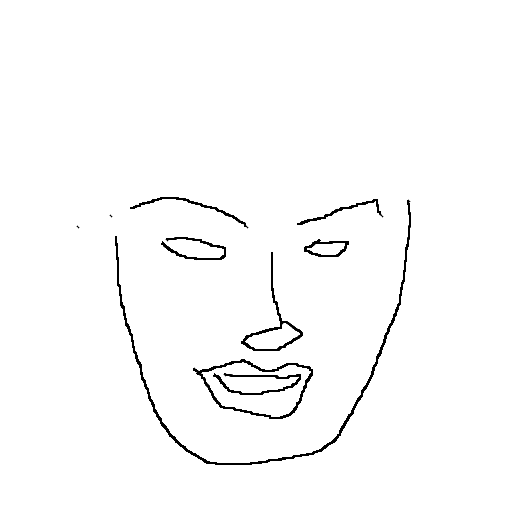


Fig1.local layer 0

* Group1:
  + 1-3: each sketch is different. They are not the same face. They have very different eye shapes. They are expected to be far away from each other. However, they are very close in Fig. 1.

1 2 3 4 5 6

* + 4-6: the only difference is the hair. These three sketches have the same face features. They are expected to be at the same place in Fig. 1 since only eye feature is visualized(Yang: due to instance norm, they might not at the same place). Unfortunately, sketch-5 is very far from sketch 4 and 6, since there is no hair in sketch-5. As Binxin explained, this might be caused by instance normalization. Same observation can be found in the visualization of Layer 2 and 3.
* Group 2





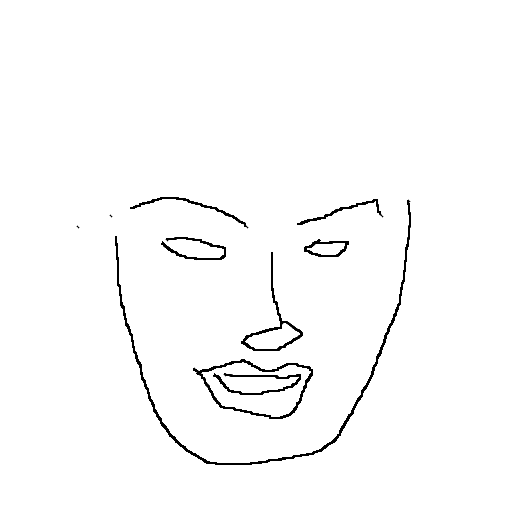
9 10 11 12 13 14 15 16

* Sketch 9-17 have the same face features, but with different decoration. The global normalization term varies dramatically so that the eye feature normalized by instance normalization varies significantly. Therefore, in the visualization fig 1/2, they are far from each other.
* Sketch-9 is a template generated from real photo. The generated results from 14、15 look realistic and have similar eyes with sketch-9. However, their eye features visualized in figs are very far. However, they are very close in Fig-global layer 2, but not other global layers.
* This can be seen that the local shape is significantly affected by global sketch, which is not desired.
* [Thinking] we should learn a normalized map to decide which part should be normalized to keep the global/local structure
* Try to design separate structure and texture.
* Group 3 – change cheek shape





18 19 20 21 22 23 24





25 26 27 28 29 30 \*31

* + It is interesting that sketch 31\*,19, 28, 21 are always close to each other in all layers visualizations, while they indeed have the same eye shape and have similar global “intensity”.
  + Sketch 22, 23, 24 have the same eye contour, but their distances are large on the visualization figures.

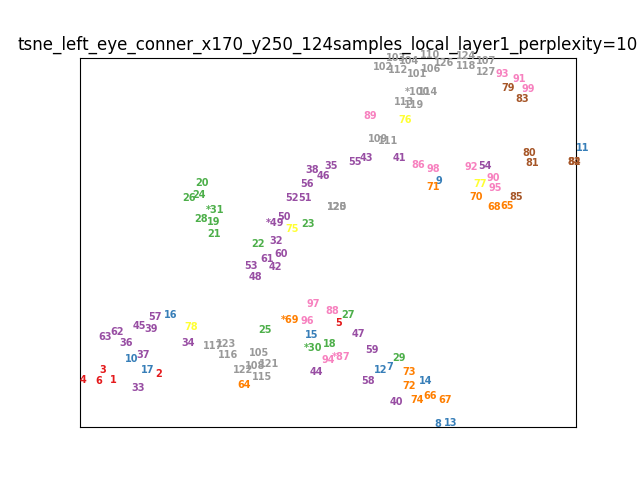


Fig2.local layer 1

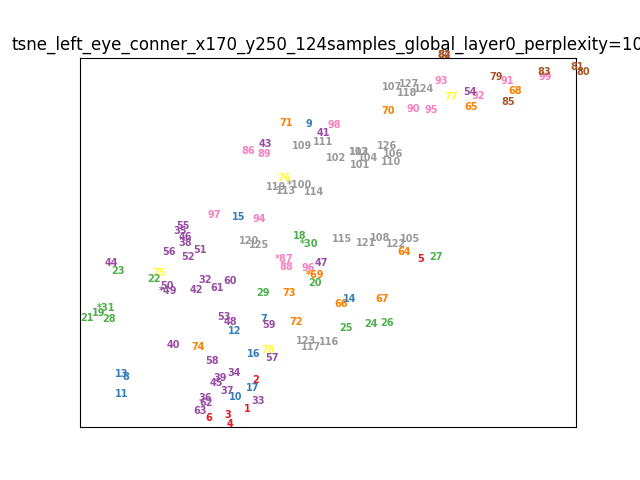


Fig3.global layer 0

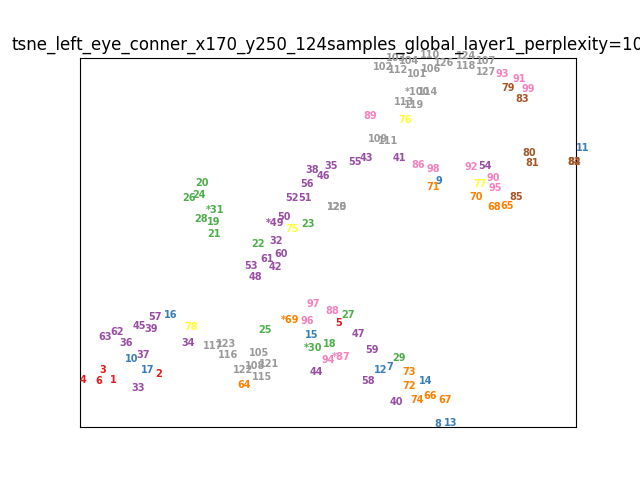


Fig4.global layer 1

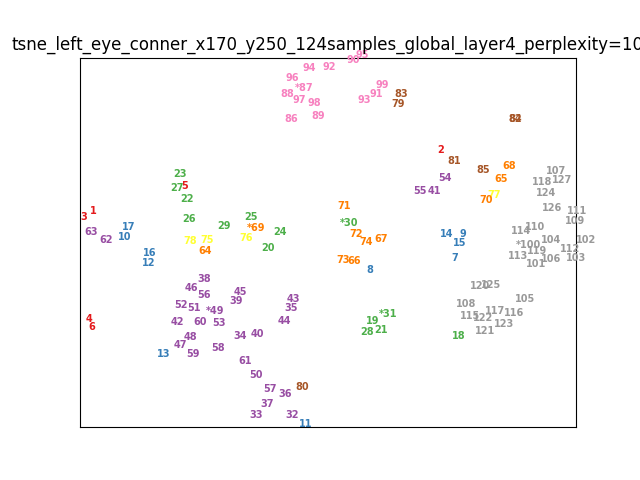


Fig5.global layer 2

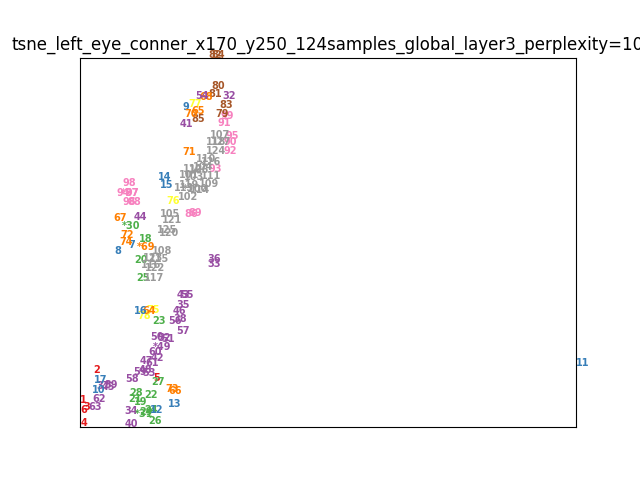


Fig6.global layer 3

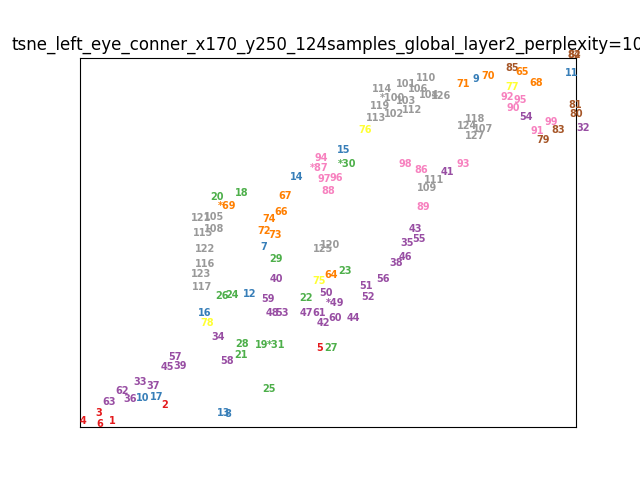
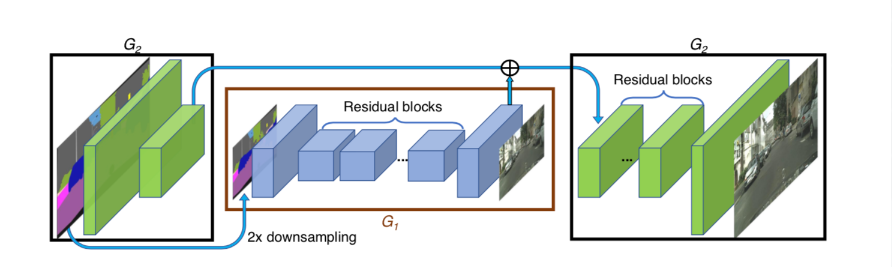
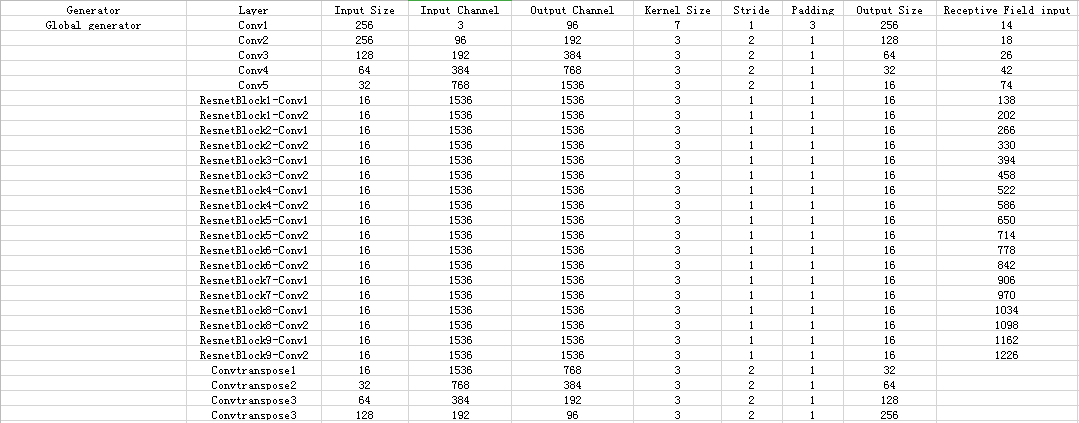


Fig7.global layer 4

* Pix2pixHD-model



* + Global generator



* Local enhancer

