

SPADE-based Line Art Colorization

Team 3

20160399 Jaehoon Yoo

20160479 Seungjoo Lee

20160534 Taeckjung Lee

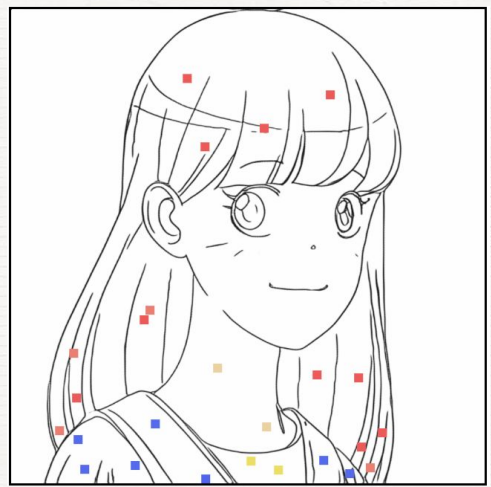
20160409 Dongjun Youn



Line Art Colorization

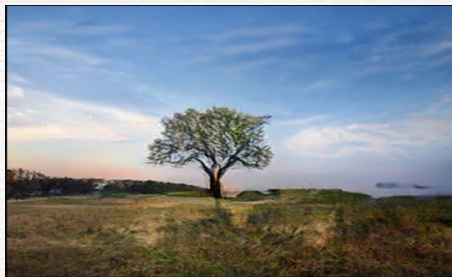
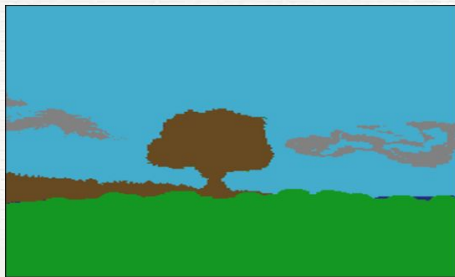
Line Art + Color Hint \Rightarrow

Color Image



SPADE

Model that produces photo-realistic image with a given semantic input



SPADE

Normalization layers wash away semantic information

- ✓ Because they are uniform / flat

Use Spatially-adaptive normalization layers



SPADE based Line Art Coloring

Line arts / color hints have role of semantic map.

- ✓ Most parts are white
- ✓ Information lost during normalization

SPADE can be helpful!



Dataset

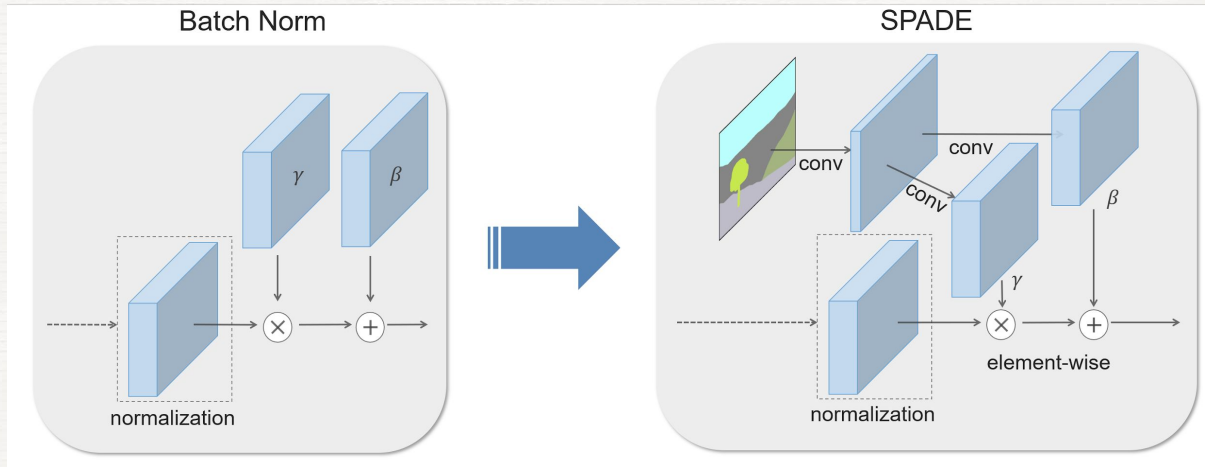
1. Download images from Safebooru
2. Apply *SketchKeras* (sketch-style image)
3. Apply *SketchSimplification* (line-style image)
4. Extract color hints from original image



SPADE

Batch normalization \Rightarrow loses semantic information

- ✓ Make parameters depend on semantic map + location



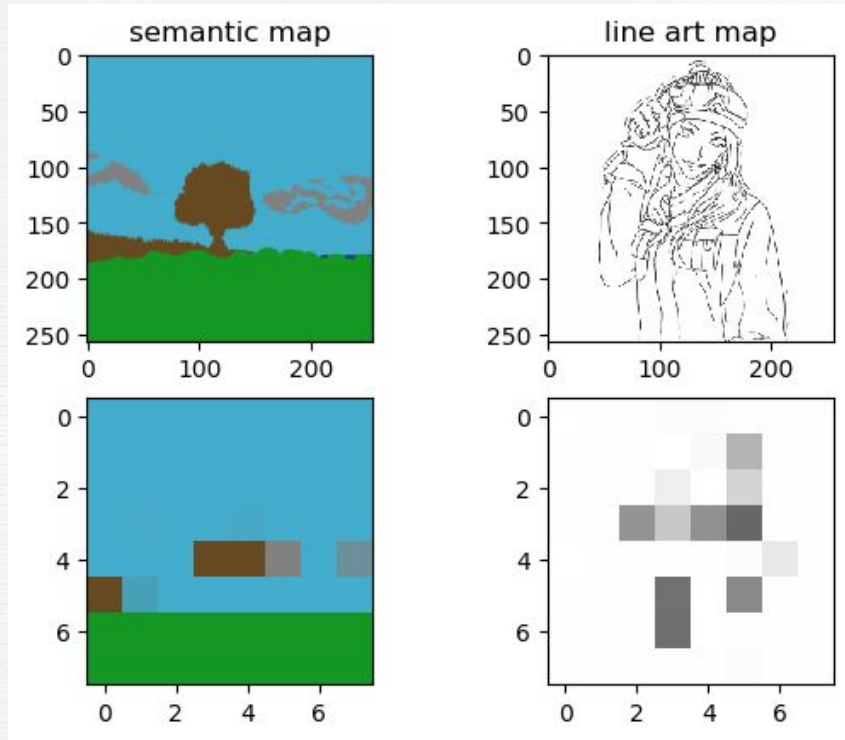
NetL

Original SPADE: semantic map was downsampled.

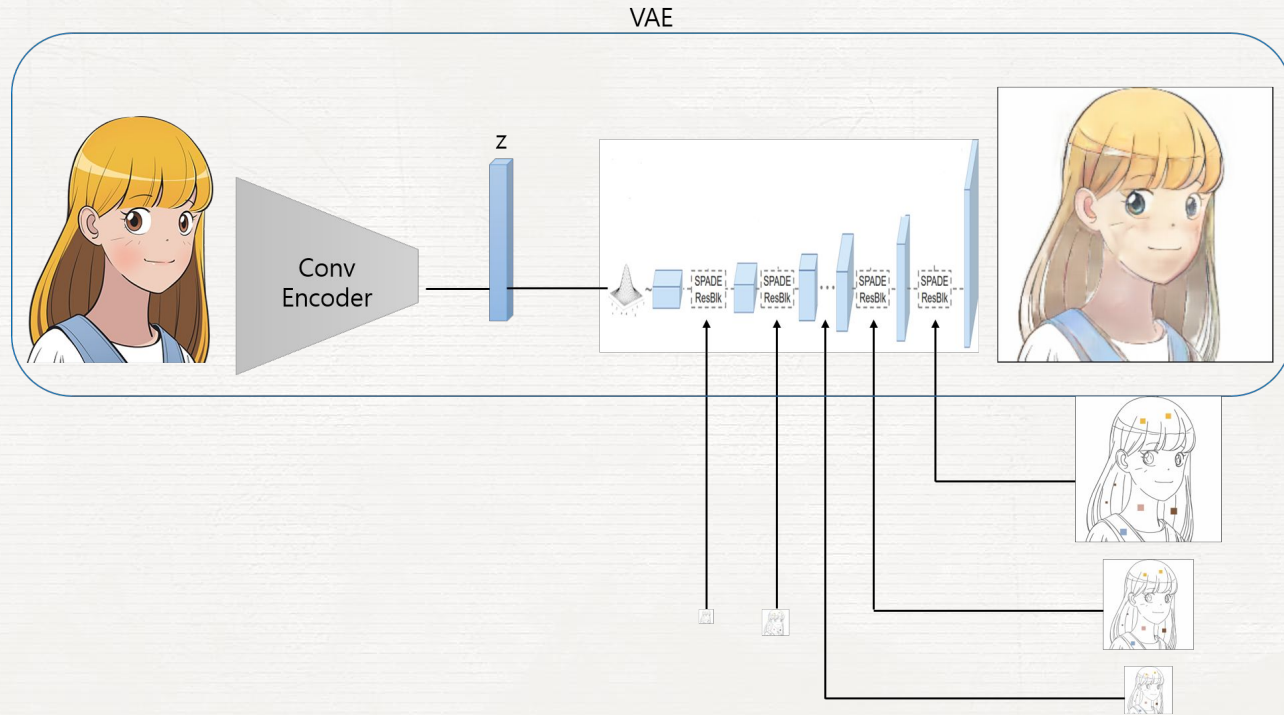
Our task: When line-art is downsampled, too much information is lost.



NetL



NetL



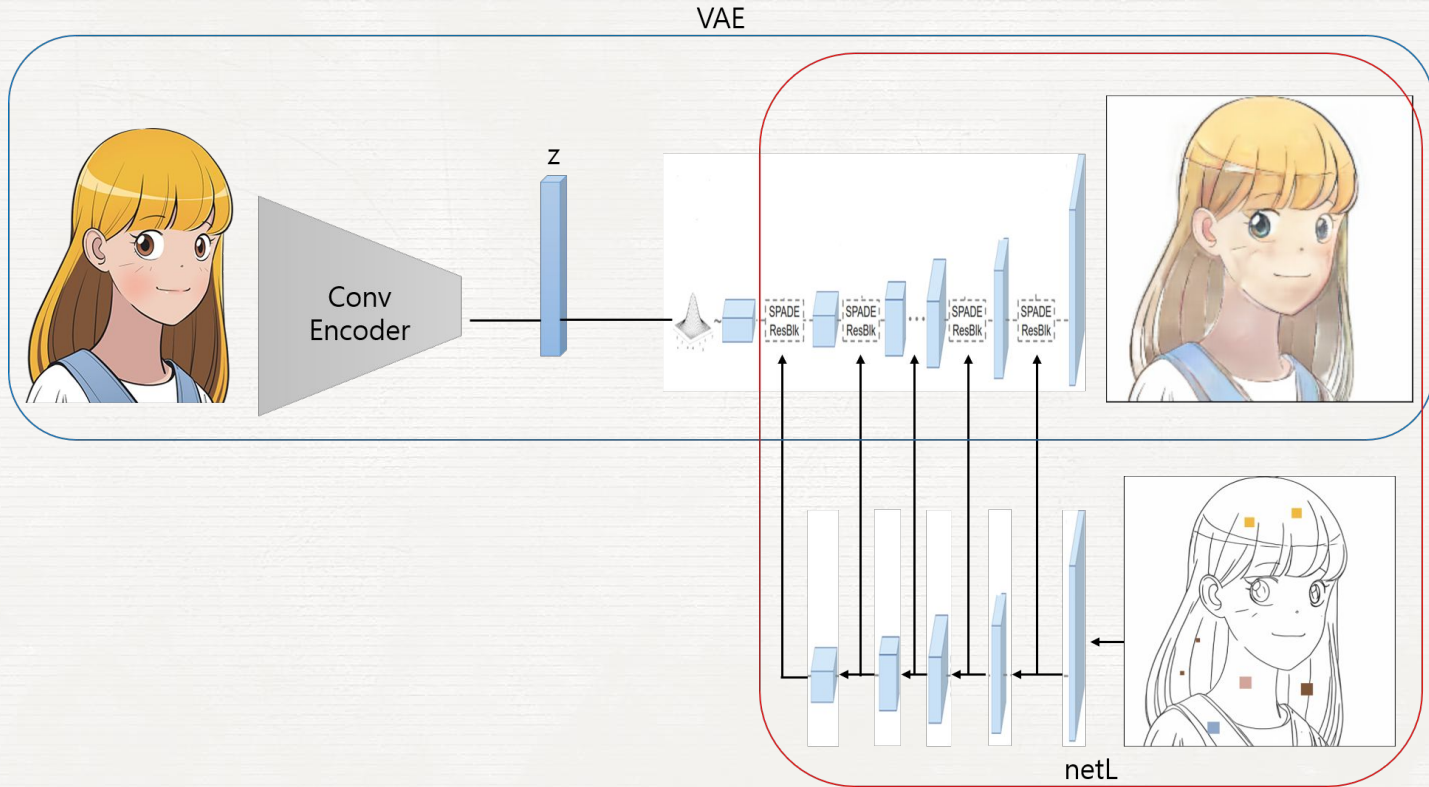
NetL

Instead of directly undersampling input,

Use NetL (Ladder-Net like model) to minimize information loss.



NetL



NetL

Hint			
GT			
w/ netL			
w/o netL			

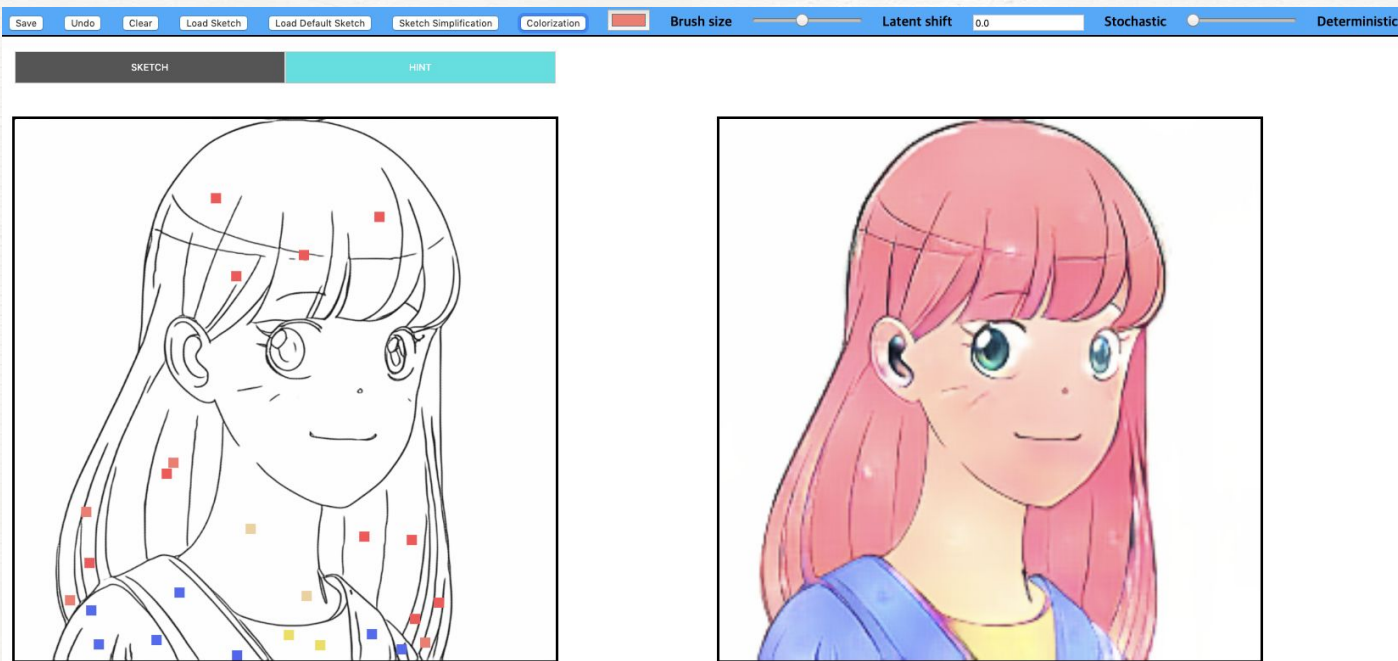
NetL gives more detailed coloring



Demo

Please connect to **chris.kaist.ac.kr:4000X**

X = last digit of your student id # (mod 3) (e.g., 2016039**9** -> 4000**0**)



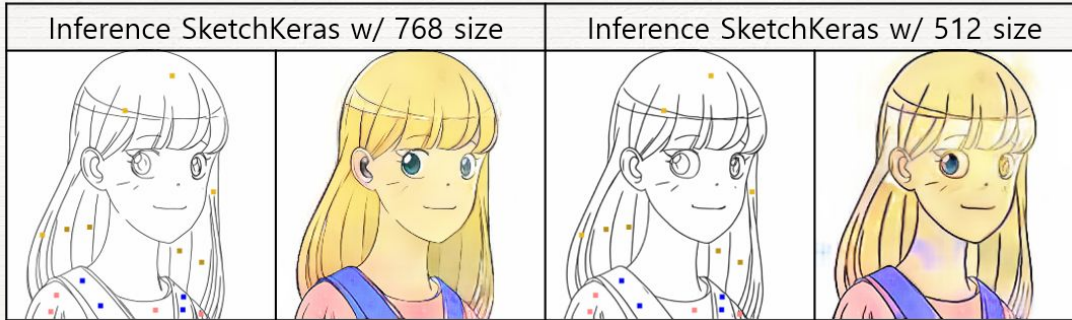
Future Work

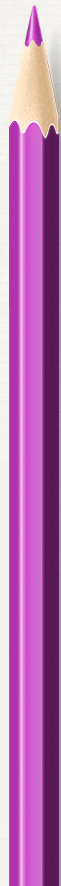
1. Binary input for line art
 - (Current) 256 gray-scale
 - (Change to) Binary black/white



Future Work

2. Use various line arts
 - Another Model (Xdog)
 - Line thickness





Thanks!

Any questions?

<https://github.com/Ugness/Line-Art-Colorization-SPADE>