

NII CODH
20/08/05



*a new **workflow** for anime character **creation***

Yanghua Jin

Preferred Networks

Otaku Market Size

Revenues in billions, 2017

Anime Industry Market

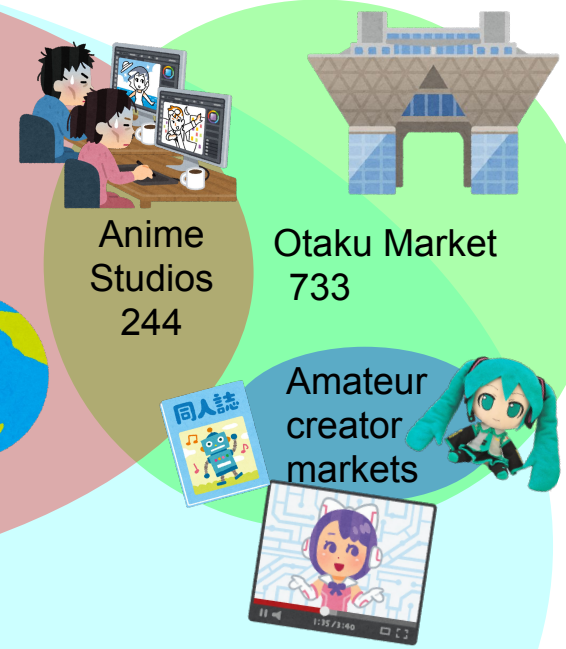
2153

Anime Studios 244

Otaku Market
733

Amateur creator markets

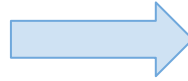
Anime related markets



What stop us from creating?



Hard work



Appropriate tools

GAN for anime character creation



Generate

👍 +1

👎 -1

🐦 Share on Twitter

Options

☐ Advanced Mode

Model

Amaryllis 128x128 Ver.170716 (3.8MB)

Hair Color

Random

Hair Style

Random

Eye Color

Random

Blush

Off

Random

On

Smile

Off

Random

On

Open Mouth

Off

Random

On

Hat

Off

Random

On

Ribbon

Off

Random

On

Glasses

Off

Random

On

Noise

Random

Fixed

Current Noise



Noise Import/Export

Import

Export

Operations

Import

Export

Reset

WebGL Acceleration ?

Disabled

Enabled

- DRAGAN with an auxiliary classifier
- Controlling by conditions

MakeGirlsMoe, Jin et al., 2017

GAN for anime character creation


Start here
Choose your initial
waifu

Color palette
Tune the color
palette

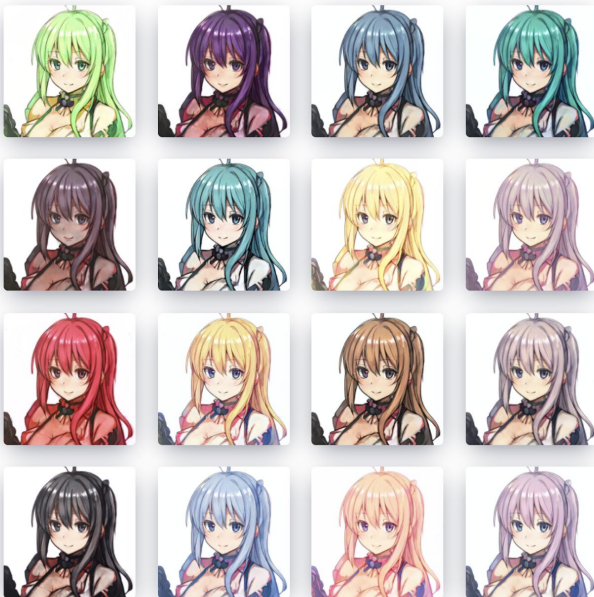
Details
Fine tune the details

Pose
Finish with your
favorite pose!

YOUR WAIFU.



♥ Keep this girl and skip this step



- StyleGAN
- Decompose the stylegan architecture in to 3 level:
 - Color: High level style
 - Details: Middle level style
 - Pose: Low level style
- User can explore the model with different latent styles

Waifu Labs
Sizigi Studio, 2019



petalica paint



くいぷこ
rypko

Create ***characters*** with ***precise control***

Image Manipulation

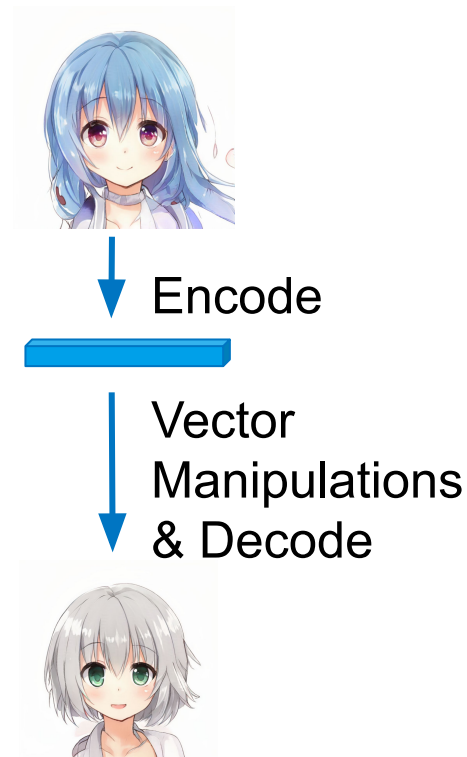
- Existing works encoded images into feature vectors
- And use feature manipulation to control image appearance

Pros

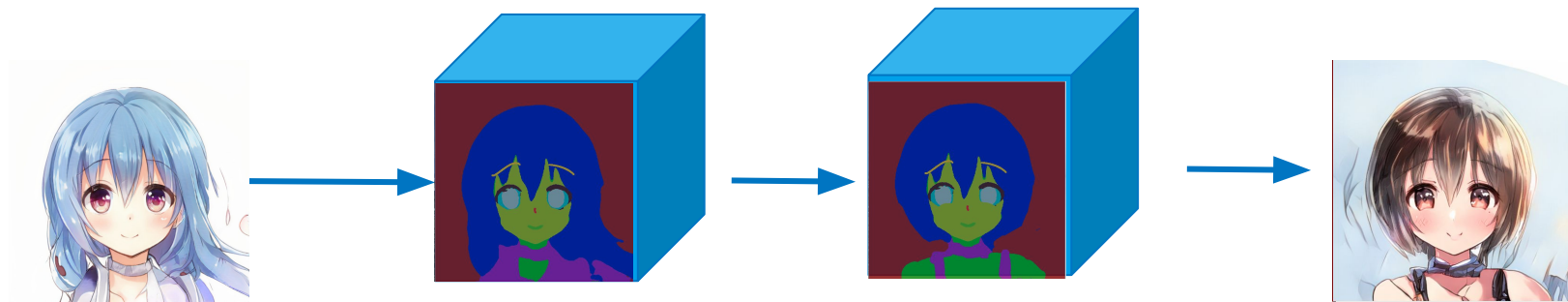
- Easier to manipulate in feature space

Cons

- Lacks of precise control



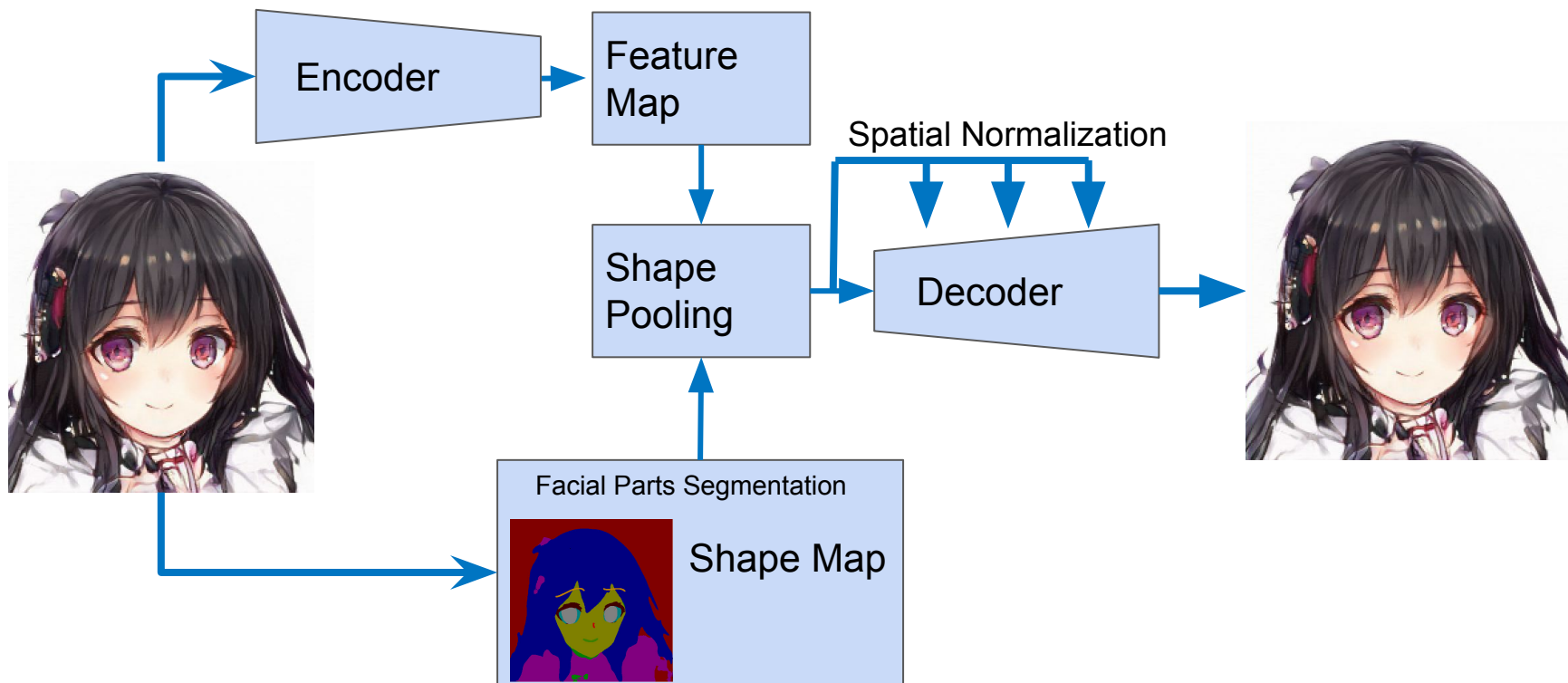
Decompose the latent space



Texture Feature Manipulation

- Images as composition of shapes and their textures
- Disentangled shapes & textures
- Enables us to control shapes and textures individually

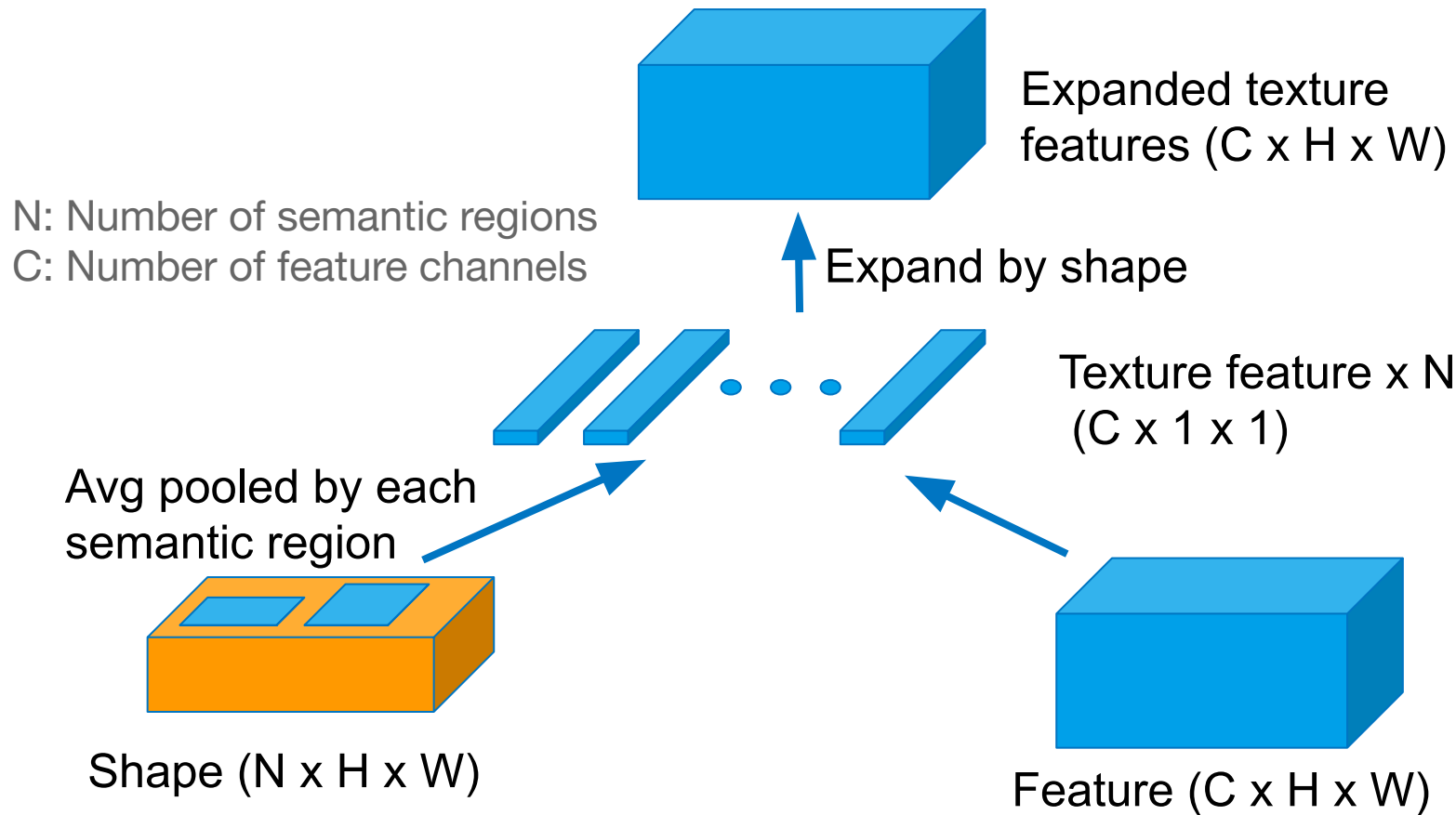
Training Pipeline



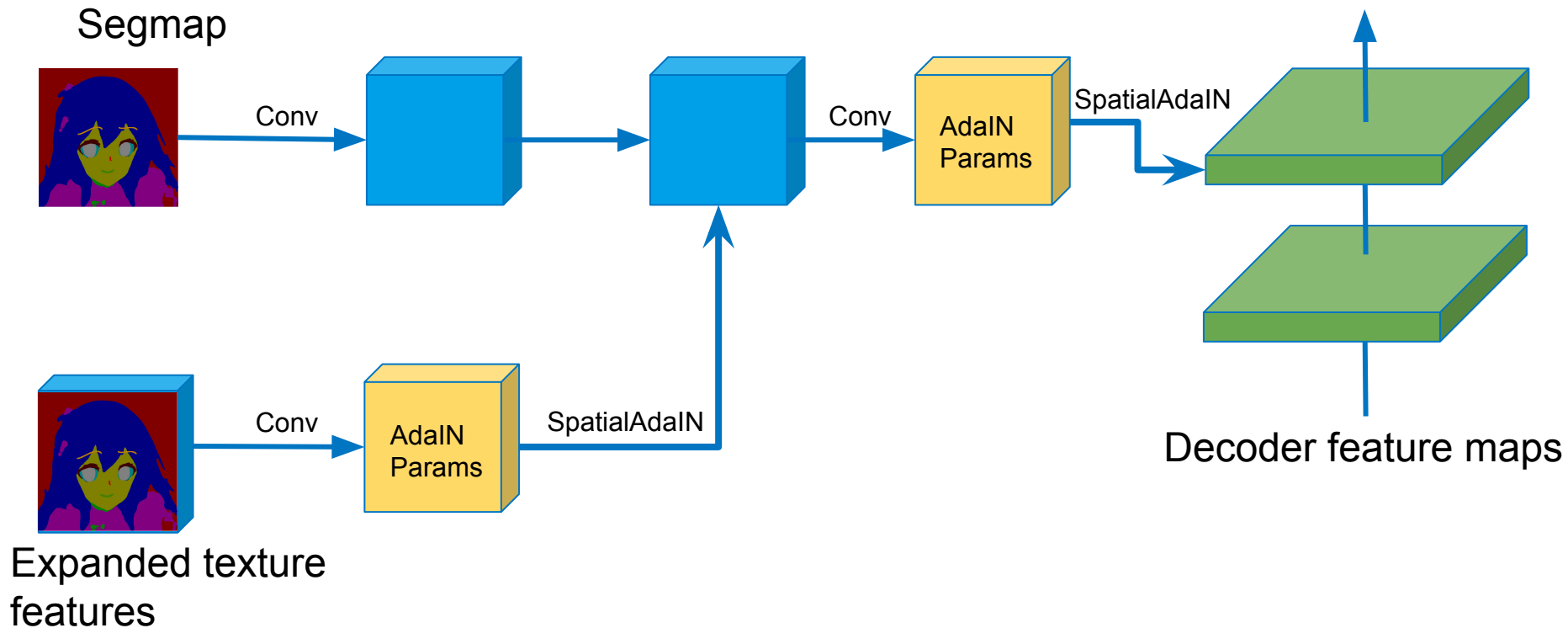
Concurrent work on CVPR 20

SEAN: Image Synthesis with Semantic Region-Adaptive Normalization

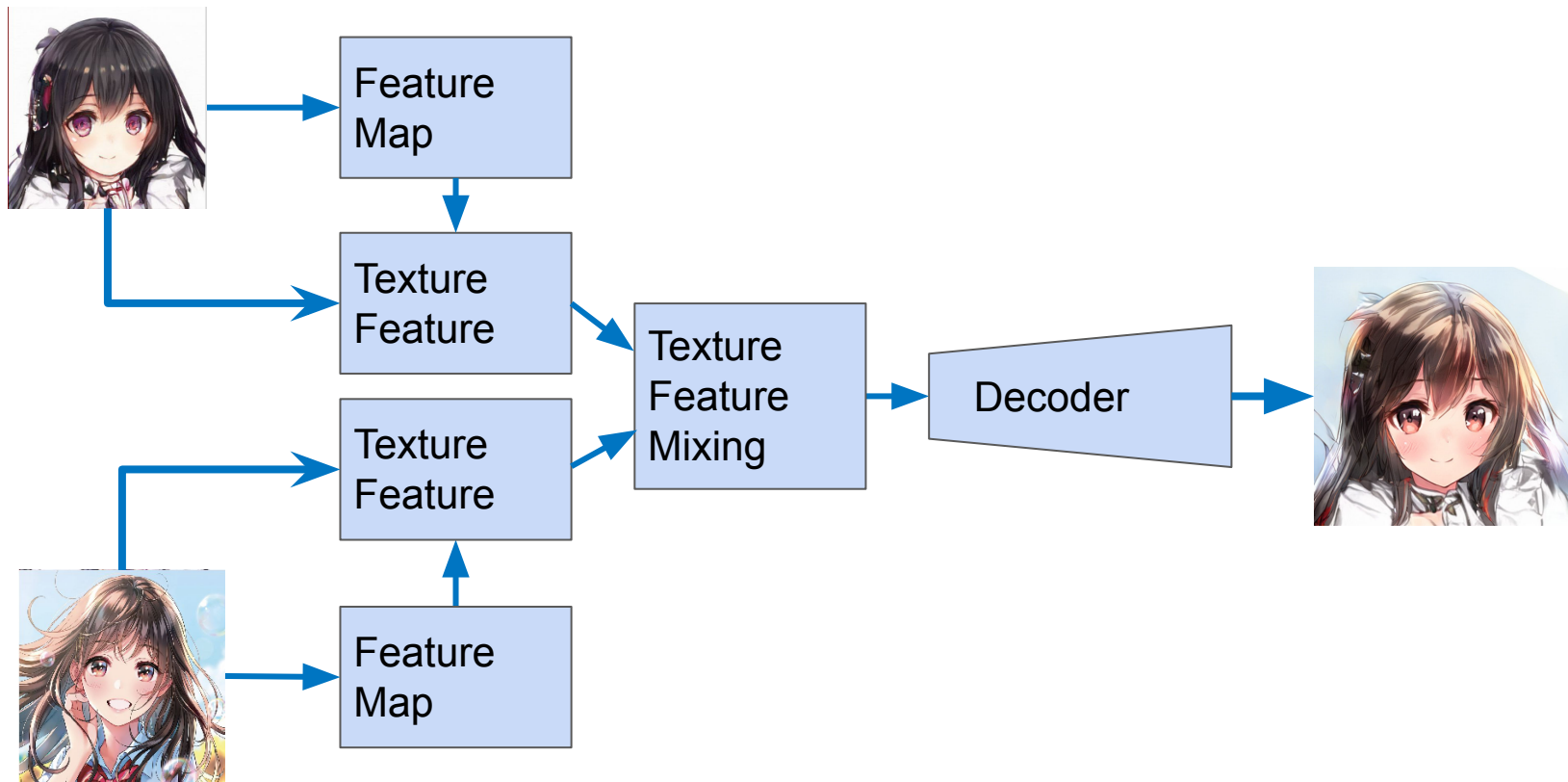
Shape Pooling Module



Spatial Normalization Module



Testing Pipeline





Crypko

生成

My Crypkos



- ☐ 眉毛
- ☐ 口
- ☐ 鼻
- ☐ まつげ
- ☐ 黒目
- ☐ 白目
- ☐ 服
- ☒ 髪
- ☐ 顔
- ☐ 肌
- ☐ 背景



- ☐ ブラシ
- ☒ 消しゴム
- ☐ 選択
- ☐ 切り取り
- ☐ カラーパレット

カーソルサイズ



セーブ

3x speed



Animate anime characters

Animate it!

- Fancy NN based approach
 - Failed to do precise control
 - Hard to compute on edge devices
 - Difficult to integrate into existing games
- 2D Mesh Morphing based approach
 - Explainable
 - Easy to run on edge devices
 - Widely industrial use



Bringing Portraits to Life

Hadar Averbuch-Elor
Tel-Aviv University

Daniel Cohen-Or
Tel-Aviv University

Johannes Kopf
Facebook

Michael F. Cohen
Facebook

This video has voice-over.

Some existing apps:

- Mug life

Animate it!



No Layers !!!

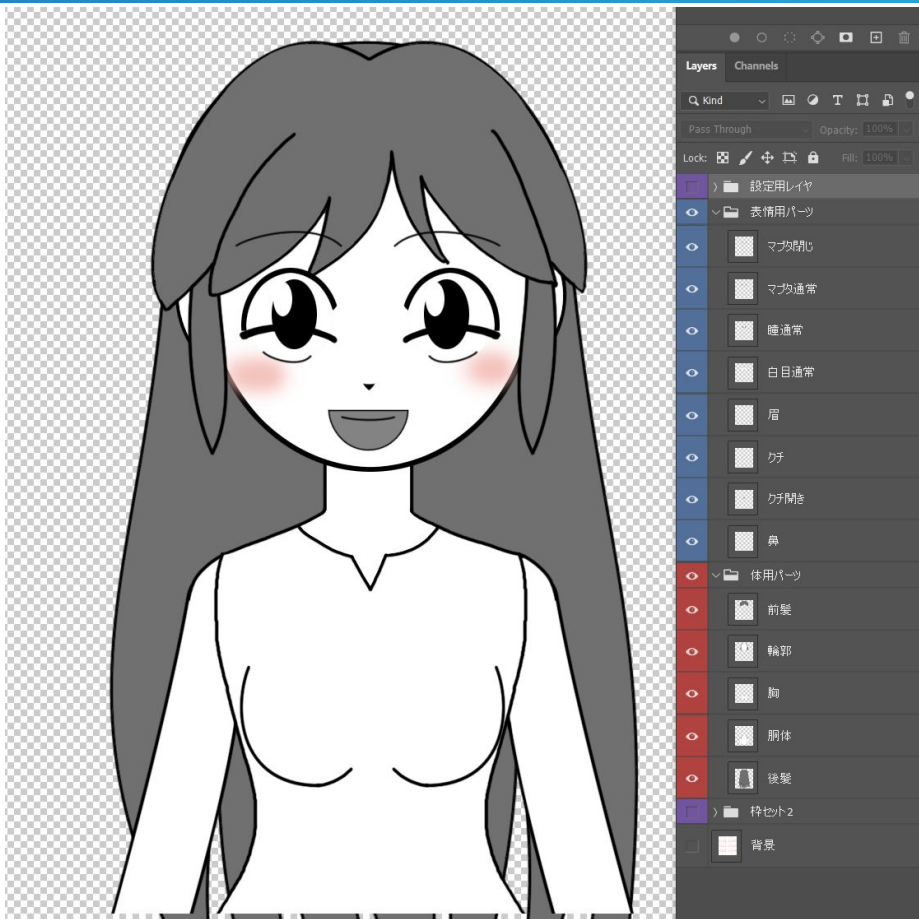


GAN Generated real people and anime characters

Industrial solution for character animation



	Live2D	E-Mote	Spine
Mesh Type	Unstructured Grid	Structured Grid	Unstructured Grid
Complexity	High	Low	Middle
Bone	No	No	Yes
Templates	No	Yes	No
Open-sourced SDK	No	No	Yes
Extendability	Middle	Low	High
Common use cases	Anime character animation	Anime character expression	Action clips/ SD character animation

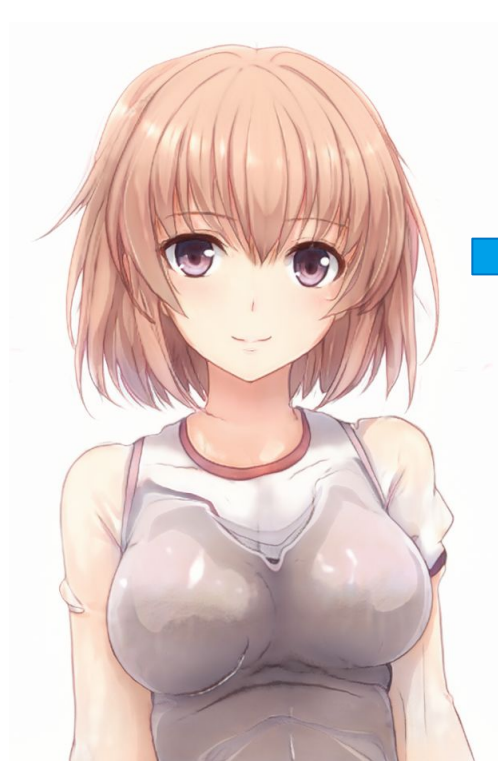


- Eyebrow
- Eyelash
- Eyelash closed
- Iris
- White of the eye
- Nose
- Mouth
- Mouth closed
- Face outline
- Body
- Front Hair
- Back Hair

E-Mote Demo



Overview



GAN Generated

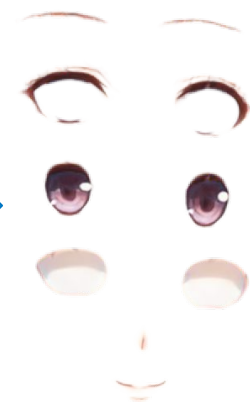


- Eyebrow
- Eyelash
- Iris
- White of the eye
- Nose
- Mouth



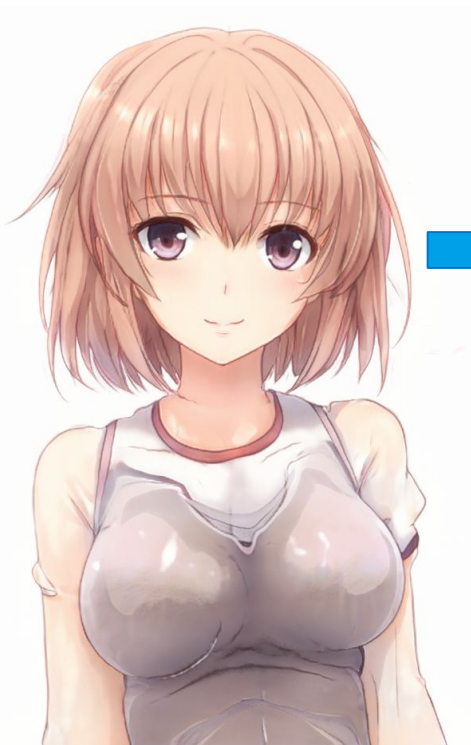
- Face outline
- Body
- Front Hair
- Back Hair

Fine-grained Facial Parts Segmentation



- Eyebrow
- Eyelash
- Iris
- White of the eye
- Nose
- Mouth

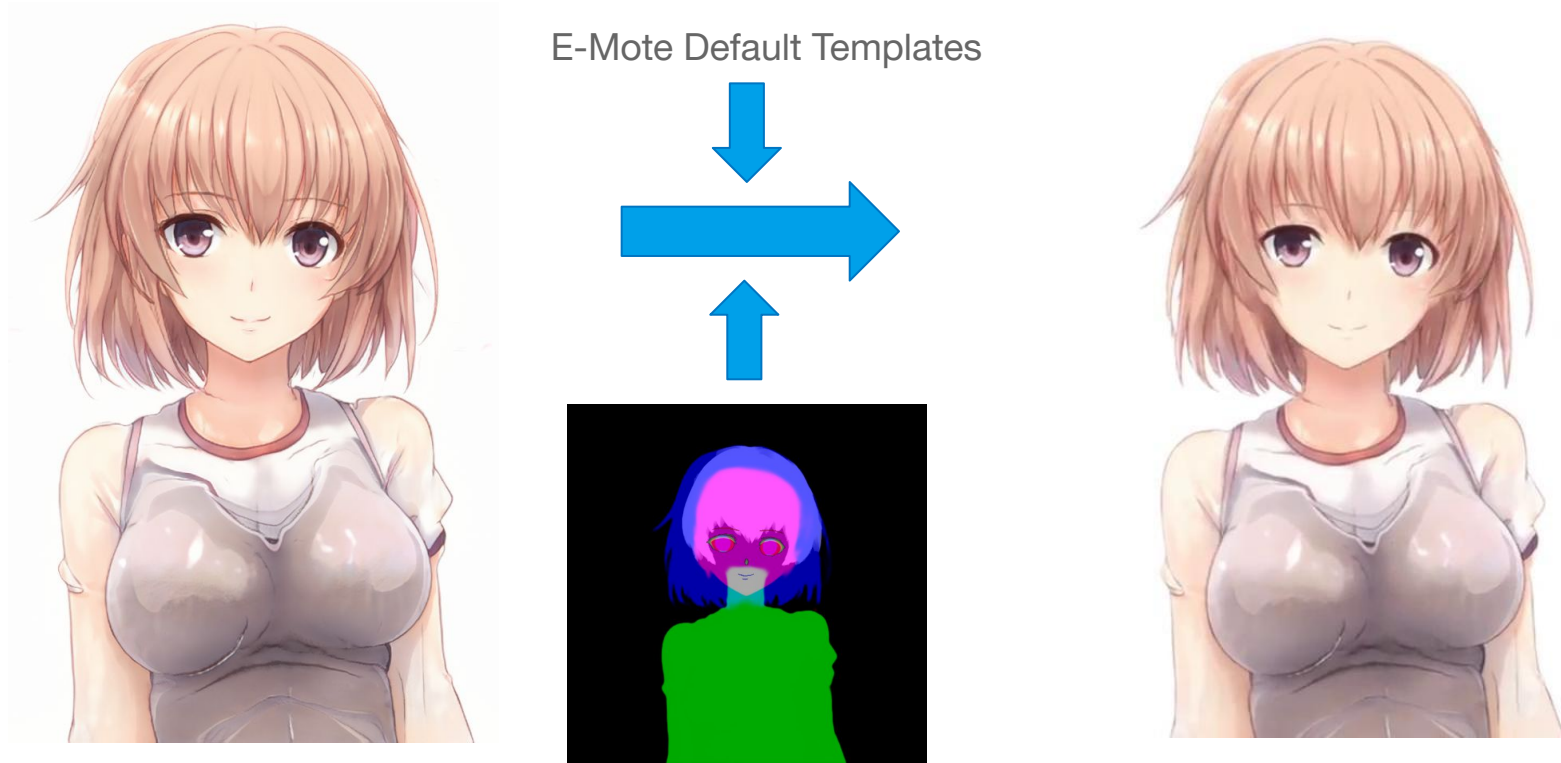
Amodal Segmentation & Completion



- Face Outline
- Body
- Front Hair
- Back Hair

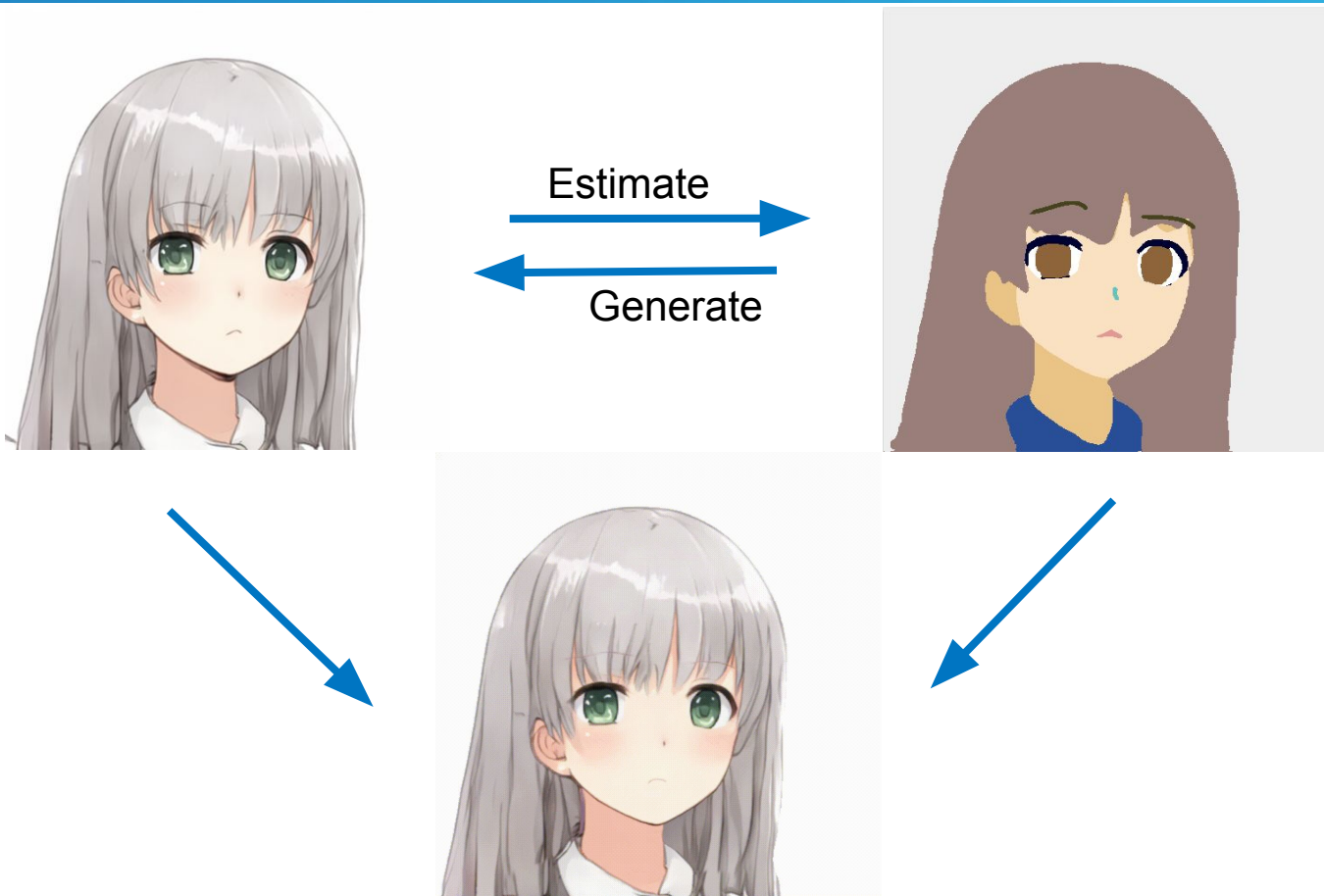


Plug and Play



Conclusion

Workflow



A decorative graphic consisting of several overlapping, wavy lines in various shades of blue, creating a sense of motion and depth. The waves originate from the left side and flow towards the right, with some lines curving upwards and others downwards.

Q&A