MLDS HW3-2 3-3

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Model

Baseline model

-> Did not learn tags

- Generator
  - noise_input = (100,);
  - text_input = (119,);
  - # num of (hair, eyes) pairs
  - text_emb = Dense(256,'relu')(text_input);
  - concatenate([noise_input, text_emb]);
  - Dense(4*4*512); Reshape((4, 4, 512));
  - Batchnorm(mom=0.9); Relu;
  - Conv2DTranspose(256, kernel=5);
  - Batchnorm(mom=0.9); Relu;
  - Conv2DTranspose(128, kernel=5);
  - Batchnorm(mom=0.9); Relu;
  - Conv2DTranspose(64, kernel=5);
  - Batchnorm(mom=0.9); Relu;
  - Conv2DTranspose(3, kernel=5);
  - Tanh;
- Training
  - Adam(lr = 0.0002, beta = 0.5)

- Discriminator
  - image_input = (64,64,3);
  - text_input = (119,);
  - text_emb = Dense(256,'relu')(text_input);
  - text_emb = Reshape((1,1,256))(text_emb);
  - tiled_emb = tile(text_emb, [1,4,4,1]);
  - Conv2D(64 ,kernel=5)(image_input); LeakyRelu;
  - Conv2D(128, kernel=5);
  - Batchnorm(mom=0.9); LeakyRelu;
  - Conv2D(256, kernel=5);
  - Batchnorm(mom=0.9); LeakyReLu;
  - Conv2D(512, kernel=5);
  - Batchnorm(mom=0.9);
  - image_feat = LeakyRelu;
  - concatenate([image_feat, tiled_emb]);
  - Conv2D(512, kernel=1, strides=(1,1));
  - Flatten;
  - Dense(1, 'sigmoid');

CGAN

15 epochs

Baseline model

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes
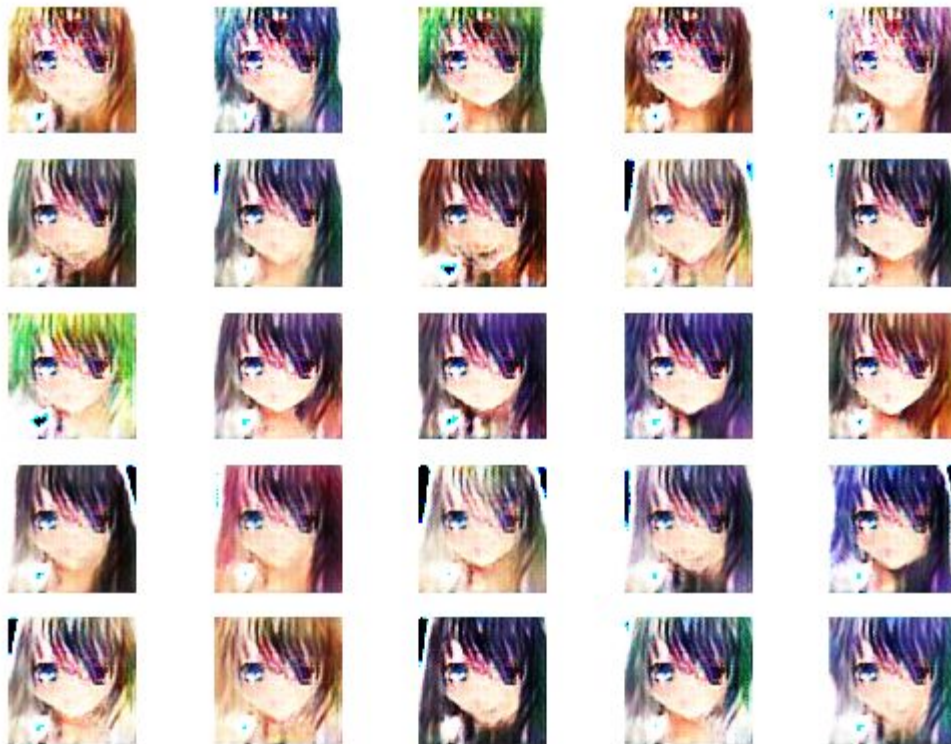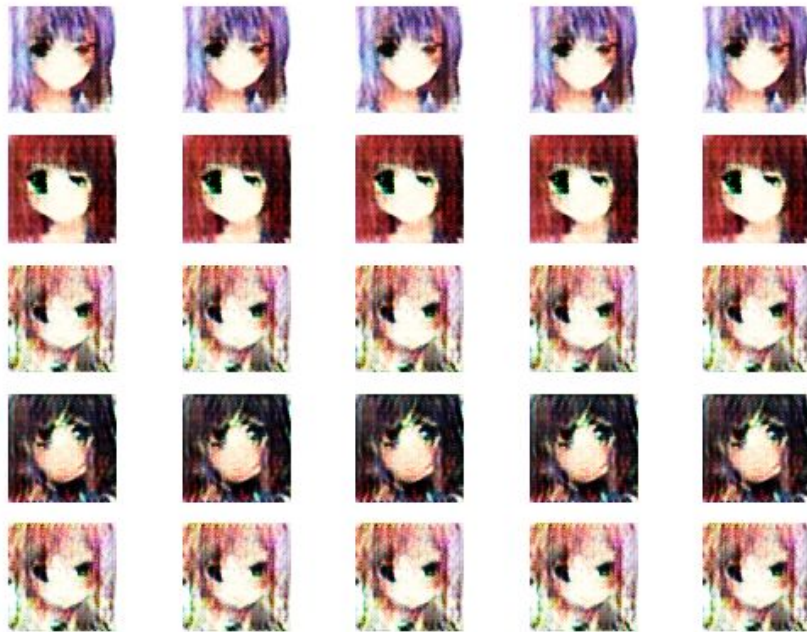
CGAN

25 epochs

Baseline model

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes

Training Times

G=3

D=1

15 epochs

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes
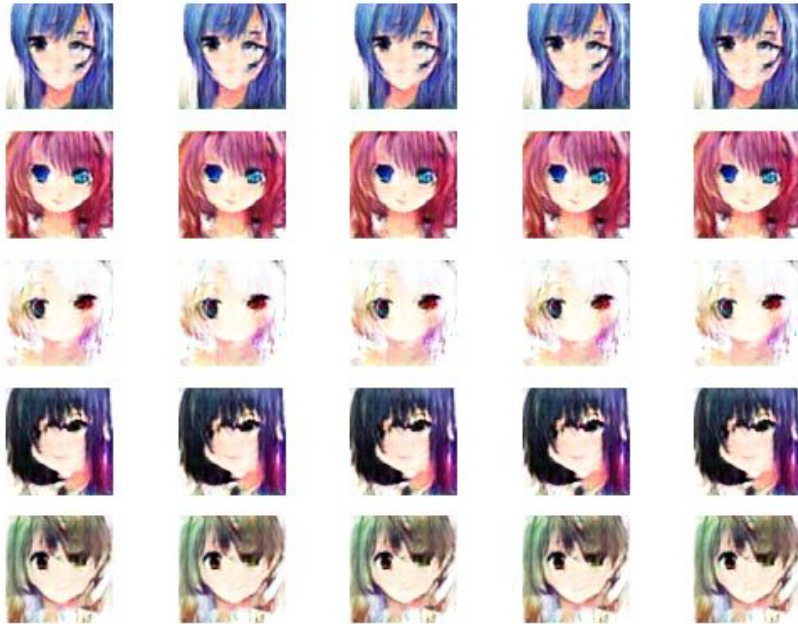
Training Times

D=2

G=1

15epochs

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes

Training Times

G=2

D=1

10 epochs

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes

Training Times

G=3

D=1

10 epochs

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes

Model

AC GAN(same model)

-> Still did not learn tags

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

blonde hair orange eyes

Adjust Learning Rate

G=0.5*0.0002
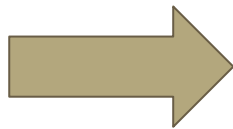
D=0.0002

pink hair black eyes

black hair purple eyes
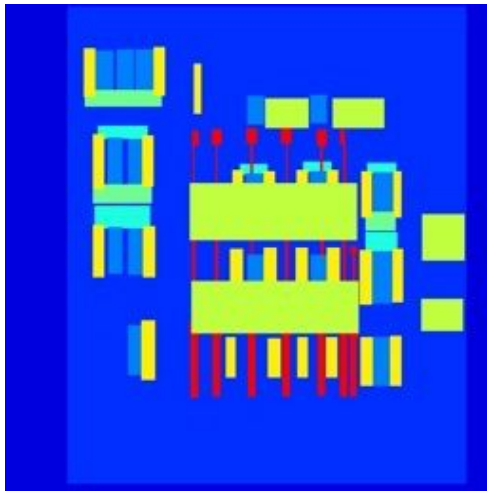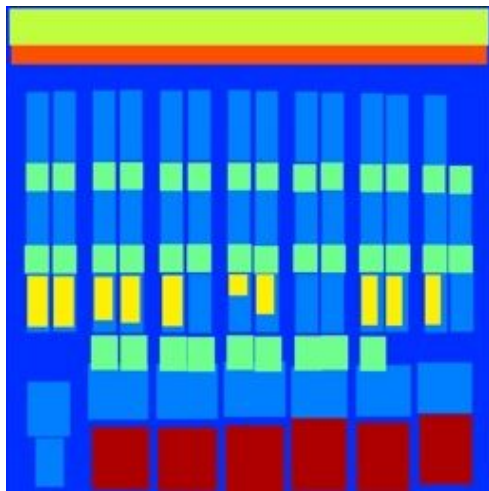
red hair red eyes

aqua hair green eyes

blonde hair orange eyes

Adjust Learning rate

G=0.6*0.0002

D=0.0002

pink hair black eyes

black hair purple eyes

red hair red eyes

aqua hair green eyes

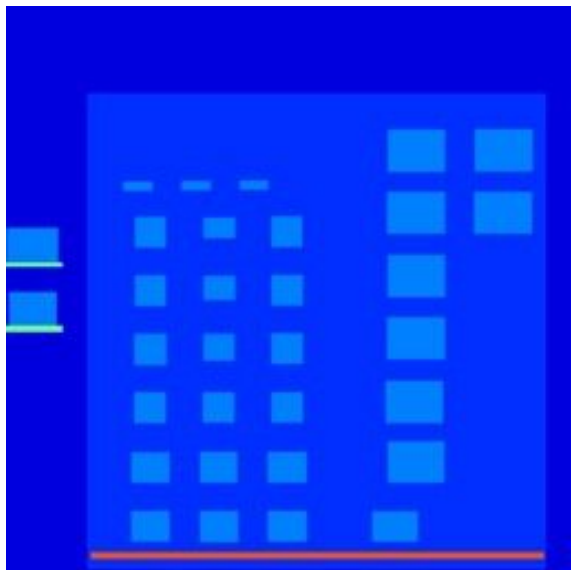blonde hair orange eyes

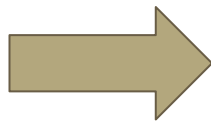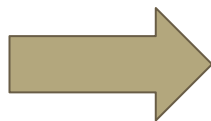# labels to facade pix2pix

labels to facade
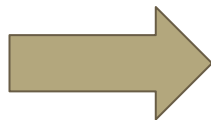
labels to facade

Zebra CycleGAN

Zebra

Zebra

Summer -> Winter

Summer -> Winter

Summer -> Winter