COMS 4995 sec 06
Deep Learning for Computer Vision

readme

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Code structure:

|-- build_data.py   # turn images data into tfrecord

|-- discriminator.py # discriminator structure

|-- export_graph.py # export history checkpoint into *.pb file

|-- generator.py # generator structure

|-- inference.py # inference on test data

|-- model_d.py # Cycle GANs model with hinted discriminator

|-- model_g.py # Cycle GANs model with hinted generator

|-- model_gd.py # Cycle GANs model with both hinted discriminator and generator

|-- ops.py # a couple of function define tensor-flow layers

|-- reader.py # helper file for load data

|-- segementation.py # code for unsupervised segmentation

|-- train_d.py # train Cycle GANs with hinted discriminator

|-- train_g.py # train Cycle GANs with hinted generator

|-- train_gd.py # train Cycle GANs with both hinted discriminator and generator

|-- utils.py # global utensil function such as query images, convert data types etc.

Acknowledgment:

1. CycleGANs official implementation in pytorch
   https://github.com/junyanz/CycleGAN/
2. CycleGANs implementation by vanhuyz in tensor-flow
   https://github.com/vanhuyz/CycleGAN-TensorFlow

I use GitHub code from **2(vanhuyz)** as starter code, the above code structure follows the same pattern.

Modify files:

Model.py → |- model_d.py # include hinted discriminator

　　　　　　　　|- model_g.py # include hinted generator

　　　　　　　　|- model_gd.py # include both hinted discriminator and hinted generator

Train.py → |- train_d.py # Add segmentation work-flow in training Cycle GANs with hinted
　　　　　　　　　　　discriminator

　　　　　　　　|- train_g.py # Add segmentation work-flow in training Cycle GANs with hinted
　　　　　　　　　　　generator

|- train_gd.py # Add segmentation work-flow in training Cycle GANs with hinted discriminator and hinted generator

Inference.py → |- inference.py # Include batch inference and html visualization for inferencing test pictures

New files:

Segementation.py: # unsupervised clustering segmentation based on (R, G, B) value using k-means algorithm.

Instructions:

To train the model:

python3 build_data.py # load data in tf records

python3 train_d.py # train Cycle GANs with hinted discriminator

python3 train_g.py # train Cycle GANs with hinted generator

python3 train_gd.py # train Cycle GANs with both hinted discriminator and generator

To test the model

python3 export_graph.py --checkpoint_dir checkpoints/20180423-0738 \

        --XtoY_model summer2winter.pb \

        --YtoX_model winter2summer.pb \

        --image_size 128   # export the checkpoint to *.pb file

python3 inference.py --model pretrained/summer2winter.pb \

      --input data/norway_rail/testA \

      --output data/norway_rail/testA \

      --image_size 128 \

      --direction A2B   # summer to winter

python3 inference.py --model pretrained/winter2summer.pb \

      --input data/norway_rail/testB \

      --output data/norway_rail/testB \

      --image_size 128 \

      --direction B2A # winter to summer

Continue training

python3 train.py --load_model 20180424-2049 # load checkpoint