TecoGAN代码分析笔记

1. main.py
   1. 引用库

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | numpy>=1.14.3 | | scipy>=1.0.1 | | scikit-image>=0.13.0 | | matplotlib>=1.5.1 | | pandas>=0.23.1 | | Keras>=2.1.2 | | torch>=0.4.0 | | torchvision>=0.2.1 | | opencv-python>=2.4.11 | | ipython>=7.4.0 | |

* 1. 超参数

|  |  |  |  |
| --- | --- | --- | --- |
| 名称 | 含义 | 默认值 | 类型 |
| **Directories** | | | |
| input\_dir\_LR | 输入测试低分数据，for inference mode | /data/yyl/teco-video/ | Str |
| input\_dir\_len | length of the input for inference mode, -1 means all | -1 | Int |
| input\_dir\_HR | The directory of the input resolution input data, for inference mode | None | Str |
| mode | Train or inference | Train | Str |
| output\_dir | The output directory of the checkpoint | "ex\_TecoGAN%s/" % time\_str | Str |
| output\_pre | 输出结果保存路径 | “” | Str |
| output\_name | The pre name of the outputs | “output” | Str |
| output\_ext | 'The format of the output when evaluating | “jpg” | Str |
| summary\_dir | The dirctory to output the summary | os.path.join(train\_dir, "log/") | Str |
| **Models** | | | |
| checkpoint | If provided, the weight will be restored from the provided checkpoint | "model/ourFRVSR" | Str |
| num\_resblock | How many residual blocks are there in the generator | 16 | Int |
| pre\_trained\_model | If True, the weight of generator will be loaded as an initial point, else continue the training | True | Bool |
| vgg\_ckpt | path to checkpoint file for the vgg19 |  | Str |
| **Machine Resources** | | | |
| cudaID | CUDA devices | “1” | Str |
| queue\_thread | The threads of the queue (More threads can speedup the training process. | 12 | int |
| name\_video\_queue  \_capacity | The capacity of the filename queue | 1024 | Int |
| video\_queue\_capacity | The capacity of the video queue | 1024 | Int |
| video\_queue\_batch | shuffle\_batch queue capacity | 2 | Int |
| **Training Details** | | | |
| **The data preparing**  **operation** |  |  |  |
| RNN\_N | The number of the rnn recurrent length | 10 | Int |
| batch\_size | Rt | 4 | Int |
| flip | Whether random flip data augmentation is applied | True | Bool |
| random\_crop | Whether perform the random crop | True | Bool |
| movingFirstFrame | Whether use constant moving first frame randomly. | True | Bool |
| crop\_size | rt | 32 | Int |
| **Training data settings** |  |  |  |
| input\_video\_dir | The directory of the video input data, for training |  | Str |
| input\_video\_pre | The pre of the directory of the video input data | “scene” | Str |
| str\_dir | The starting index of the video directory | 2000 | Int |
| end\_dir | The end index of the video directory | 2220 | Int |
| end\_dir\_val | The ending index for validation of the video directory | 2274 | Int |
| max\_frm | 每个文件夹最大帧数 | 119 | Int |
| **The loss parameters** |  |  |  |
| vgg\_scaling | The scaling factor for the VGG perceptual loss, disable with negative value | 0.2 | Float |
| warp\_scaling | The scaling factor for the warp | 1.0 | Float |
| pingpang | use bi-directional recurrent or not | True | Bool |
| pp\_scaling | factor of pingpang loss | 0.5 | Float |
| **Training parameters** |  |  |  |
| EPS | 小数 | 1e-12 | Float |
| learning\_rate | Rt | 5e-5 | Float |
| decay\_step | The steps needed to decay the learning rate | 5e5 | Int |
| decay\_rate | The decay rate of each decay step | 0.5 | Float |
| stair | Whether perform staircase decay. True => decay in discrete interval. | True | Bool |
| beta | The beta1 parameter for the Adam optimizer | 0.9 | Float |
| adameps | 'The eps parameter for the Adam optimizer | 1e-8 | Float |
| max\_epoch | Rt | None | Int |
| max\_iter | rt | 1000000 | Int |
| display\_freq | The diplay frequency of the training process | 20 | Int |
| summary\_freq | The frequency of writing summary | 100 | Int |
| save\_freq | The frequency of saving images | 10000 | Int |
| **Dst parameters** |  |  |  |
| ratio | The ratio between content loss and adversarial loss | 0.01 | Float |
| Dt\_mergeDs | Whether only use a merged Discriminator. | True | Bool |
| Dt\_ratio\_0 | The starting ratio for the temporal adversarial loss | 1.0 | float |
| Dt\_ratio\_add | The increasing ratio for the temporal adversarial loss | 0.0 | Float |
| Dt\_ratio\_max | The max ratio for the temporal adversarial loss | 1.0 | Float |
| Dbalance | An adaptive balancing for Discriminators | 0.4 | Float |
| crop\_dt | factor of dt crop | 0.75 | Float |
| D\_LAYERLOSS | Whether use layer loss from D | True | Bool |

* 1. 训练过程
     1. frvsr\_gpu\_data\_loader