

# gan\_test

December 14, 2020

```
[ ]: pip install bing-image-downloader
```

```
Requirement already satisfied: bing-image-downloader in  
/usr/local/lib/python3.6/dist-packages (1.0.4)
```

```
[ ]: # !pip install -U torch torchvision
```

```
[ ]: pip install -U fastai
```

```
Collecting fastai
```

```
  Downloading https://files.pythonhosted.org/packages/0c/55/53a6e59561f97e  
6b2699e665d587aaf1502ea1efc428e17e17a1a7e23af1/fastai-2.1.9-py3-none-any.whl  
(190kB)
```

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 |                               | 194kB 11.3MB/s
```

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Requirement already satisfied, skipping upgrade: scikit-learn in  
/usr/local/lib/python3.6/dist-packages (from fastai) (0.22.2.post1)
```

```
Requirement already satisfied, skipping upgrade: torch>=1.7.0 in  
/usr/local/lib/python3.6/dist-packages (from fastai) (1.7.0+cu101)
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Requirement already satisfied, skipping upgrade: pyyaml in  
/usr/local/lib/python3.6/dist-packages (from fastai) (3.13)
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Requirement already satisfied, skipping upgrade: pillow>6.0.0 in  
/usr/local/lib/python3.6/dist-packages (from fastai) (7.0.0)
```

```
Requirement already satisfied, skipping upgrade: torchvision>=0.8 in  
/usr/local/lib/python3.6/dist-packages (from fastai) (0.8.1+cu101)
```

```
Requirement already satisfied, skipping upgrade: packaging in  
/usr/local/lib/python3.6/dist-packages (from fastai) (20.7)
```

```
Requirement already satisfied, skipping upgrade: scipy in  
/usr/local/lib/python3.6/dist-packages (from fastai) (1.4.1)
```

```
Requirement already satisfied, skipping upgrade: pandas in  
/usr/local/lib/python3.6/dist-packages (from fastai) (1.1.5)
```

```
Collecting fastcore>=1.3.8
```

```
  Downloading https://files.pythonhosted.org/packages/5c/ad/7c358331783cf8  
220e1bd0cca52df3e6092b3f6d4ce5b837fffb9a64c53/fastcore-1.3.12-py3-none-any.whl  
(51kB)
```

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```
Requirement already satisfied, skipping upgrade: matplotlib in  
/usr/local/lib/python3.6/dist-packages (from fastai) (3.2.2)
```

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Requirement already satisfied, skipping upgrade: requests in
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/usr/local/lib/python3.6/dist-packages (from fastai) (2.23.0)  
Requirement already satisfied, skipping upgrade: fastprogress>=0.2.4 in  
/usr/local/lib/python3.6/dist-packages (from fastai) (1.0.0)  
Requirement already satisfied, skipping upgrade: pip in  
/usr/local/lib/python3.6/dist-packages (from fastai) (19.3.1)  
Requirement already satisfied, skipping upgrade: spacy in  
/usr/local/lib/python3.6/dist-packages (from fastai) (2.2.4)  
Requirement already satisfied, skipping upgrade: numpy>=1.11.0 in  
/usr/local/lib/python3.6/dist-packages (from scikit-learn->fastai) (1.18.5)  
Requirement already satisfied, skipping upgrade: joblib>=0.11 in  
/usr/local/lib/python3.6/dist-packages (from scikit-learn->fastai) (0.17.0)  
Requirement already satisfied, skipping upgrade: dataclasses in  
/usr/local/lib/python3.6/dist-packages (from torch>=1.7.0->fastai) (0.8)  
Requirement already satisfied, skipping upgrade: typing-extensions in  
/usr/local/lib/python3.6/dist-packages (from torch>=1.7.0->fastai) (3.7.4.3)  
Requirement already satisfied, skipping upgrade: future in  
/usr/local/lib/python3.6/dist-packages (from torch>=1.7.0->fastai) (0.16.0)  
Requirement already satisfied, skipping upgrade: pyparsing>=2.0.2 in  
/usr/local/lib/python3.6/dist-packages (from packaging->fastai) (2.4.7)  
Requirement already satisfied, skipping upgrade: pytz>=2017.2 in  
/usr/local/lib/python3.6/dist-packages (from pandas->fastai) (2018.9)  
Requirement already satisfied, skipping upgrade: python-dateutil>=2.7.3 in  
/usr/local/lib/python3.6/dist-packages (from pandas->fastai) (2.8.1)  
Requirement already satisfied, skipping upgrade: cyclor>=0.10 in  
/usr/local/lib/python3.6/dist-packages (from matplotlib->fastai) (0.10.0)  
Requirement already satisfied, skipping upgrade: kiwisolver>=1.0.1 in  
/usr/local/lib/python3.6/dist-packages (from matplotlib->fastai) (1.3.1)  
Requirement already satisfied, skipping upgrade: idna<3,>=2.5 in  
/usr/local/lib/python3.6/dist-packages (from requests->fastai) (2.10)  
Requirement already satisfied, skipping upgrade: chardet<4,>=3.0.2 in  
/usr/local/lib/python3.6/dist-packages (from requests->fastai) (3.0.4)  
Requirement already satisfied, skipping upgrade: certifi>=2017.4.17 in  
/usr/local/lib/python3.6/dist-packages (from requests->fastai) (2020.12.5)  
Requirement already satisfied, skipping upgrade:  
urllib3!=1.25.0,!1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.6/dist-  
packages (from requests->fastai) (1.24.3)  
Requirement already satisfied, skipping upgrade: setuptools in  
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (50.3.2)  
Requirement already satisfied, skipping upgrade: plac<1.2.0,>=0.9.6 in  
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (1.1.3)  
Requirement already satisfied, skipping upgrade: wasabi<1.1.0,>=0.4.0 in  
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (0.8.0)  
Requirement already satisfied, skipping upgrade: preshed<3.1.0,>=3.0.2 in  
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (3.0.5)  
Requirement already satisfied, skipping upgrade: catalogue<1.1.0,>=0.0.7 in  
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (1.0.0)  
Requirement already satisfied, skipping upgrade: murmurhash<1.1.0,>=0.28.0 in  
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (1.0.5)

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Requirement already satisfied, skipping upgrade: cymem<2.1.0,>=2.0.2 in
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (2.0.5)
Requirement already satisfied, skipping upgrade: srsly<1.1.0,>=1.0.2 in
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (1.0.5)
Requirement already satisfied, skipping upgrade: thinc==7.4.0 in
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (7.4.0)
Requirement already satisfied, skipping upgrade: tqdm<5.0.0,>=4.38.0 in
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (4.41.1)
Requirement already satisfied, skipping upgrade: blis<0.5.0,>=0.4.0 in
/usr/local/lib/python3.6/dist-packages (from spacy->fastai) (0.4.1)
Requirement already satisfied, skipping upgrade: six>=1.5 in
/usr/local/lib/python3.6/dist-packages (from python-
dateutil>=2.7.3->pandas->fastai) (1.15.0)
Requirement already satisfied, skipping upgrade: importlib-metadata>=0.20;
python_version < "3.8" in /usr/local/lib/python3.6/dist-packages (from
catalogue<1.1.0,>=0.0.7->spacy->fastai) (3.1.1)
Requirement already satisfied, skipping upgrade: zipp>=0.5 in
/usr/local/lib/python3.6/dist-packages (from importlib-metadata>=0.20;
python_version < "3.8"->catalogue<1.1.0,>=0.0.7->spacy->fastai) (3.4.0)
Installing collected packages: fastcore, fastai
  Found existing installation: fastai 1.0.61
  Uninstalling fastai-1.0.61:
    Successfully uninstalled fastai-1.0.61
Successfully installed fastai-2.1.9 fastcore-1.3.12

```

```
[ ]: from bing_image_downloader import downloader
```

```
[ ]: downloader.download("cars", limit=10, output_dir='dataset',
↳adult_filter_off=True, force_replace=False, timeout=60)
```

```
[!!]Indexing page: 1
```

```
[%] Indexed 10 Images on Page 1.
```

```
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```

```

[%] Downloading Image #1 from
https://wallpapersite.com/images/wallpapers/lamborghini-centenario-
roadster-1440x2560-2017-cars-luxury-cars-2092.jpg
[!] Issue getting: https://wallpapersite.com/images/wallpapers/lamborghini-
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[%] Downloading Image #1 from https://weneedfun.com/wp-
content/uploads/2016/08/Tumblr-Ocean-Backgrounds-16.png
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[!!!]Indexing page: 2

[%] Indexed 12 Images on Page 2.

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content/uploads/2019/08/rachel.jpg

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<https://wallpapersite.com/images/wallpapers/toyota-supra-1440x2560-toyota-gazoo-racing-2018-4k-16568.jpeg>

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[!!]Indexing page: 3

[%] Indexed 10 Images on Page 3.

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[%] Downloading Image #6 from

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vision-van-640x960-concept-cars-future-commercial-2322.jpeg
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retrowave-art-neon-4k-12203.jpg
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headlights-hd-16030.jpg
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[%] Downloading Image #10 from https://weneedfun.com/wp-
content/uploads/2016/08/Amazing-Wedding-Cakes-2.jpg
[%] File Downloaded !
```

```
[ ]: from fastai.vision.gan import *
     from fastai.data.all import *
     from fastai.vision.all import *
```

```
[ ]: bs = 2
     size = 64
```

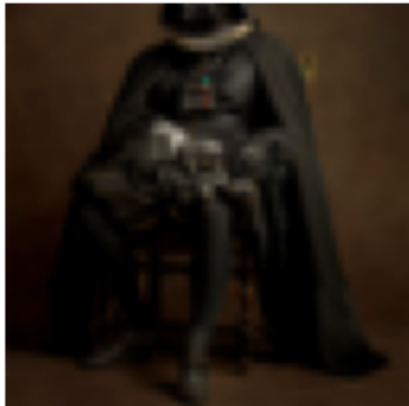
```
[ ]: dblock = DataBlock(blocks = (TransformBlock, ImageBlock),
                        get_x = generate_noise,
                        get_items = get_image_files,
                        splitter = IndexSplitter([]),
                        item_tfms=Resize(size, method=ResizeMethod.Crop),
                        batch_tfms = Normalize.from_stats(torch.tensor([0.5,0.5,0.5,
↪5]), torch.tensor([0.5,0.5,0.5])))
```

```
[ ]: path = Path("dataset/cars/");path
```

```
[ ]: Path('dataset/cars')
```

```
[ ]: dls = dblock.dataloaders(path, path=path, bs=bs)
```

```
[ ]: dls.show_batch(max_n=16)
```



```
[ ]: generator = basic_generator(64, n_channels=3, n_extra_layers=1)
critic = basic_critic (64, n_channels=3, n_extra_layers=1,
↪act_cls=partial(nn.LeakyReLU, negative_slope=0.2))
```

```
[ ]: learn = GANLearner.wgan(dls, generator, critic, opt_func = RMSProp)
```

```
[ ]: learn.recorder.train_metrics=True
learn.recorder.valid_metrics=False
```

```
[ ]: import torch
torch.__version__
```

```
[ ]: '1.7.0+cu101'
```

```
[ ]: !pip show fastai
```



Name: fastai  
Version: 2.1.9  
Summary: fastai simplifies training fast and accurate neural nets using modern best practices  
Home-page: <https://github.com/fastai/fastai/tree/master/>  
Author: Jeremy Howard, Sylvain Gugger, and contributors  
Author-email: [info@fast.ai](mailto:info@fast.ai)  
License: Apache Software License 2.0  
Location: /usr/local/lib/python3.6/dist-packages  
Requires: scipy, spacy, pip, pandas, requests, packaging, torch, fastprogress, scikit-learn, matplotlib, pillow, fastcore, torchvision, pyyaml  
Required-by:

```
[ ]: learn.fit(1, 2e-4, wd=0.)
```

<IPython.core.display.HTML object>

```
-----  
TypeError                                Traceback (most recent call last)  
<ipython-input-21-d8be2b5f57fe> in <module>()  
----> 1 learn.fit(1, 2e-4, wd=0.)  
  
/usr/local/lib/python3.6/dist-packages/fastai/learner.py in fit(self, n_epoch, lr, wd, cbs, reset_opt)  
    204         self.opt.set_hypers(lr=self.lr if lr is None else lr)  
    205         self.n_epoch = n_epoch  
--> 206         self._with_events(self._do_fit, 'fit', CancelFitException, self._end_cleanup)  
    207  
    208     def _end_cleanup(self): self.dl, self.xb, self.yb, self.pred, self.loss  
    => None, (None,), (None,), None, None  
  
/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _with_events(self, f, event_type, ex, final)  
    153  
    154     def _with_events(self, f, event_type, ex, final=noop):  
--> 155         try:         self(f'before_{event_type}')         ;f()  
    156         except ex: self(f'after_cancel_{event_type}')  
    157         finally:    self(f'after_{event_type}')         ;final()  
  
/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _do_fit(self)  
    195         for epoch in range(self.n_epoch):  
    196             self.epoch=epoch  
--> 197             self._with_events(self._do_epoch, 'epoch', CancelEpochException)  
    198  
    199     def fit(self, n_epoch, lr=None, wd=None, cbs=None, reset_opt=False)
```

```

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _with_events(self,
↳f, event_type, ex, final)
    153
    154     def _with_events(self, f, event_type, ex, final=noop):
--> 155         try:             self(f'before_{event_type}')           ;f()
    156         except ex: self(f'after_cancel_{event_type}')
    157         finally:   self(f'after_{event_type}')           ;final()

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _do_epoch(self)
    189
    190     def _do_epoch(self):
--> 191         self._do_epoch_train()
    192         self._do_epoch_validate()
    193

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _do_epoch_train(self)
    181     def _do_epoch_train(self):
    182         self.dl = self.dls.train
--> 183         self._with_events(self.all_batches, 'train',
↳CancelTrainException)
    184
    185     def _do_epoch_validate(self, ds_idx=1, dl=None):

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _with_events(self,
↳f, event_type, ex, final)
    153
    154     def _with_events(self, f, event_type, ex, final=noop):
--> 155         try:             self(f'before_{event_type}')           ;f()
    156         except ex: self(f'after_cancel_{event_type}')
    157         finally:   self(f'after_{event_type}')           ;final()

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in all_batches(self)
    159     def all_batches(self):
    160         self.n_iter = len(self.dl)
--> 161         for o in enumerate(self.dl): self.one_batch(*o)
    162
    163     def _do_one_batch(self):

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in one_batch(self, i,
    177         self.iter = i
    178         self._split(b)
--> 179         self._with_events(self._do_one_batch, 'batch',
↳CancelBatchException)
    180
    181     def _do_epoch_train(self):

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _with_events(self,
↳f, event_type, ex, final)

```

```

153
154     def _with_events(self, f, event_type, ex, final=noop):
--> 155         try:             self(f'before_{event_type}')             ;f()
156         except ex: self(f'after_cancel_{event_type}')
157         finally:     self(f'after_{event_type}')             ;final()

/usr/local/lib/python3.6/dist-packages/fastai/learner.py in _do_one_batch(self)
164         self.pred = self.model(*self.xb)
165         self('after_pred')
--> 166         if len(self.yb): self.loss = self.loss_func(self.pred, *self.yb
167         self('after_loss')
168         if not self.training or not len(self.yb): return

/usr/local/lib/python3.6/dist-packages/torch/nn/modules/module.py in
↳ _call_impl(self, *input, **kwargs)
725         result = self._slow_forward(*input, **kwargs)
726         else:
--> 727         result = self.forward(*input, **kwargs)
728         for hook in itertools.chain(
729             _global_forward_hooks.values(),

/usr/local/lib/python3.6/dist-packages/fastai/vision/gan.py in forward(self,
↳ *args)
19
20     def forward(self, *args):
----> 21         return self.generator(*args) if self.gen_mode else self.
↳ critic(*args)
22
23     def switch(self, gen_mode=None):

/usr/local/lib/python3.6/dist-packages/fastai/vision/gan.py in critic(self,
↳ real_pred, input)
110         fake = self.gan_model.generator(input).requires_grad_(False)
111         fake_pred = self.gan_model.critic(fake)
--> 112         self.crit_loss = self.crit_loss_func(real_pred, fake_pred)
113         return self.crit_loss
114

/usr/local/lib/python3.6/dist-packages/fastai/vision/gan.py in
↳ _tk_diff(real_pred, fake_pred)
293 # Cell
294 def _tk_mean(fake_pred, output, target): return fake_pred.mean()
--> 295 def _tk_diff(real_pred, fake_pred): return real_pred.mean() - fake_pred
↳ mean()
296
297 # Cell

/usr/local/lib/python3.6/dist-packages/torch/tensor.py in __rsub__(self, other)

```

```

508         from torch.overrides import has_torch_function,
↳handle_torch_function
509         if type(self) is not Tensor and type(other) is not Tensor and
↳has_torch_function(relevant_args):
--> 510             return handle_torch_function(Tensor.__rsub__, relevant_args
↳self, other)
511             return _C._VariableFunctions.rsub(self, other)
512

/usr/local/lib/python3.6/dist-packages/torch/overrides.py in
↳handle_torch_function(public_api, relevant_args, *args, **kwargs)
1069         raise TypeError("no implementation found for '{}' on types that
↳implement "
1070                             '__torch_function__': {})
-> 1071                             .format(func_name, list(map(type, overloaded_args)) )
1072
1073 def has_torch_function(relevant_args: Iterable[Any]) -> bool:

TypeError: no implementation found for 'torch.tensor.__rsub__' on types that
↳implement __torch_function__: [<class 'fastai.vision.gan.InvisibleTensor'>,
↳<class 'fastai.torch_core.TensorImage'>]

```