

In [2]:

```
from icevision.all import *  
import pandas as pd
```

In [3]:

```
!wget https://storage.googleapis.com/open_source_datasets/ShelfImages.tar.gz  
!tar --gunzip --extract --verbose --file=ShelfImages.tar.gz
```

```
--2020-09-28 02:29:45-- https://storage.googleapis.com/open_source_data
sets/ShelfImages.tar.gz
Resolving storage.googleapis.com (storage.googleapis.com)... 74.125.197.
128, 74.125.195.128, 74.125.142.128, ...
Connecting to storage.googleapis.com (storage.googleapis.com)|74.125.19
7.128|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 580345649 (553M) [application/gzip]
Saving to: 'ShelfImages.tar.gz.1'
```

```
ShelfImages.tar.gz. 100%[=====>] 553.46M 199MB/s in
2.8s
```

```
2020-09-28 02:29:48 (199 MB/s) - 'ShelfImages.tar.gz.1' saved [58034564
9/580345649]
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ShelfImages/train/C2_P01_N4_S2_1.JPG
ShelfImages/test/C3_P04_N1_S5_1.JPG
ShelfImages/train/C1_P08_N2_S3_1.JPG
ShelfImages/test/C1_P04_N3_S3_1.JPG
ShelfImages/train/C2_P06_N1_S4_1.JPG
ShelfImages/train/C1_P06_N2_S3_1.JPG
ShelfImages/train/C2_P05_N1_S3_1.JPG
ShelfImages/train/C1_P05_N1_S3_2.JPG
ShelfImages/train/C1_P07_N1_S3_2.JPG
ShelfImages/train/C4_P04_N1_S5_1.JPG
ShelfImages/test/C4_P04_N4_S2_1.JPG
ShelfImages/train/C2_P03_N1_S3_1.JPG
ShelfImages/train/C3_P04_N2_S4_1.JPG
ShelfImages/train/C1_P06_N3_S3_2.JPG
ShelfImages/train/C2_P01_N3_S2_1.JPG
ShelfImages/train/C1_P09_N4_S3_1.JPG
ShelfImages/test/C1_P12_N2_S3_1.JPG
ShelfImages/train/C1_P12_N2_S5_1.JPG
ShelfImages/train/
ShelfImages/train/C2_P06_N2_S4_2.JPG
ShelfImages/test/C4_P08_N1_S3_1.JPG
ShelfImages/train/C2_P08_N3_S3_1.JPG
ShelfImages/train/C2_P04_N3_S3_1.JPG
ShelfImages/train/C1_P07_N2_S3_3.JPG


```
ShelfImages/train/C2_P01_N2_S3_2.JPG
ShelfImages/train/C2_P05_N2_S3_2.JPG
ShelfImages/train/C3_P01_N2_S3_1.JPG
ShelfImages/train/C3_P03_N2_S3_1.JPG
ShelfImages/test/C2_P02_N1_S4_1.JPG
ShelfImages/test/C1_P02_N2_S3_1.JPG
ShelfImages/test/C4_P07_N3_S3_1.JPG
```

In [4]:

```
class grocery(parsers.FasterRCNN, parsers.FilepathMixin, parsers.SizeMixin):
    pass
```

In [5]:

```
grocery.generate_template()
```

```
def __iter__(self) -> Any:
def height(self, o) -> int:
def width(self, o) -> int:
def filepath(self, o) -> Union[str, Path]:
def bboxes(self, o) -> List[BBox]:
def labels(self, o) -> List[int]:
def imageid(self, o) -> Hashable:
```

In [6]:

```
class grocery(parsers.FasterRCNN, parsers.FilepathMixin, parsers.SizeMixin):
    def __init__(self, df, source):
        self.df = df
        self.source = source

    def __iter__(self):
        yield from self.df.itertuples()

    def __len__(self):
        return len(self.df)

    def imageid(self, o) -> Hashable:
        return o.image_name

    def filepath(self, o) -> Union[str, Path]:
        return self.source / f"{o.image_name}"

    def height(self, o) -> int:
        return o.h

    def width(self, o) -> int:
        return o.w

    def labels(self, o) -> List[int]:
        return [0]

    def bboxes(self, o) -> List[BBox]:
        xmin = o.x
        ymin = o.y
        xmax = o.w
        ymax = o.h
        return [BBox.from_xyxy(xmin, ymin, xmax, ymax)]
        # return [BBox.from_xyxy(*np.fromstring(o.bbox, sep=","))]
```

In [7]:

```
annotation = pd.read_csv('/content/annotations.csv', low_memory=False, header=None,
names=['image_name', 'x', 'y', 'w', 'h', 'bbox', 'brand'])
```

In [8]:

```
annotation.head()
```

Out[8]:

	image_name	x	y	w	h	bbox	brand
0	C1_P01_N1_S2_1.JPG	1008	1552	1260	1928	1260,1928,1008,1552	0
1	C1_P01_N1_S2_1.JPG	1028	928	1280	1304	1280,1304,1028,928	0
2	C1_P01_N1_S2_1.JPG	24	872	268	1264	268,1264,24,872	0
3	C1_P01_N1_S2_1.JPG	280	1568	532	1944	532,1944,280,1568	0
4	C1_P01_N1_S2_1.JPG	292	872	544	1248	544,1248,292,872	0

In [9]:

```
path=Path("/content/ShelfImages")
```

In [10]:

```
tr_imgs =get_image_files(path/'train')
val_imgs =get_image_files(path/'test')
```

In [11]:

```
len(tr_imgs); len(val_imgs)
```

Out[11]:

71

In [12]:

```
train_images = []
for i in range(0,len(tr_imgs)):
    train_img = tr_imgs[i].name
    train_images.append(train_img)

val_images = []
for i in range(0,len(val_imgs)):
    valid_img = val_imgs[i].name
    val_images.append(valid_img)
```

In [13]:

```
train_data = annotation[annotation['image_name'].isin(train_images)]
valid_data = annotation[annotation['image_name'].isin(val_images)]
```

In [14]:

```
tr_parser = grocery(train_data, path / "train" )  
val_parser = grocery(valid_data, path / "test")
```

In [15]:

```
train_ds, val_ds = tr_parser.parse()  
test = val_parser.parse()
```

In [16]:

```
show_records(train_ds[:3], ncols=3)
```



In [17]:

```
pre_size = 512  
size = 384
```

In [18]:

```
train_tfms = tfms.A.Adapter([*tfms.A.aug_tfms(size=size, pre_size=pre_size), tfms.A.Normalize()])  
valid_tfms = tfms.A.Adapter([*tfms.A.resize_and_pad(size), tfms.A.Normalize()])
```

In [19]:

```
train = Dataset(train_ds, train_tfms)  
valid = Dataset(val_ds, valid_tfms)
```

In [20]:

```
samples = [train[0] for _ in range(3)]  
show_samples(samples, ncols=3, denormalize_fn=denormalize_imagenet)
```



In [21]:

```
train_dl = efficientdet.train_dl(train, batch_size=16, num_workers=4, shuffle=True)  
valid_dl = efficientdet.valid_dl(valid, batch_size=16, num_workers=4, shuffle=False)
```

In [22]:

```
model = efficientdet.model(model_name='tf_efficientdet_lite0', num_classes=1, img_size=size)
```

In [23]:

```
metrics = [COCOMetric()]
```

In [24]:

```
learn = efficientdet.fastai.learner(dls=[train_dl, valid_dl], model=model, metrics=metrics)
```

In [25]:

```
learn.freeze()  
learn.lr_find()
```



```

-----
---
ValueError                                Traceback (most recent call la
st)
<ipython-input-25-c232684d32d4> in <module>()
      1 learn.freeze()
----> 2 learn.lr_find()

/usr/local/lib/python3.6/dist-packages/fastai2/callback/schedule.py in lr_f
nd(self, start_lr, end_lr, num_it, stop_div, show_plot, suggestions)
     226     n_epoch = num_it//len(self.dls.train) + 1
     227     cb=LRFinder(start_lr=start_lr, end_lr=end_lr, num_it=num_it,
stop_div=stop_div)
--> 228     with self.no_logging(): self.fit(n_epoch, cbs=cb)
     229     if show_plot: self.recorder.plot_lr_find()
     230     if suggestions:

/usr/local/lib/python3.6/dist-packages/fastcore/utils.py in _f(*args, **
kwargs)
     450         init_args.update(log)
     451         setattr(inst, 'init_args', init_args)
--> 452         return inst if to_return else f(*args, **kwargs)
     453     return _f
     454

/usr/local/lib/python3.6/dist-packages/fastai2/learner.py in fit(self, n
_epoch, lr, wd, cbs, reset_opt)
     203         try:
     204             self.epoch=epoch;           self('begin_e
poch')
--> 205             self._do_epoch_train()
     206             self._do_epoch_validate()
     207         except CancelEpochException:  self('after_c
ancel_epoch')

/usr/local/lib/python3.6/dist-packages/fastai2/learner.py in _do_epoch_t
rain(self)
     175         try:
     176             self.dl = self.dls.train;           sel
f('begin_train')
--> 177             self.all_batches()
     178         except CancelTrainException:           sel
f('after_cancel_train')
     179         finally:                               sel
f('after_train')

/usr/local/lib/python3.6/dist-packages/fastai2/learner.py in all_batches
(self)
     153     def all_batches(self):
     154         self.n_iter = len(self.dl)
--> 155         for o in enumerate(self.dl): self.one_batch(*o)
     156
     157     def one_batch(self, i, b):

/usr/local/lib/python3.6/dist-packages/fastai2/data/load.py in __iter__
(self)
     96         self.randomize()
     97         self.before_iter()
---> 98         for b in _loaders[self.fake_1.num_workers==0](self.fake_
1):
     99             if self.device is not None: b = to_device(b, self.de

```

```

vice)
  100         yield self.after_batch(b)

/usr/local/lib/python3.6/dist-packages/torch/utils/data/dataloader.py in
__next__(self)
  361
  362     def __next__(self):
--> 363         data = self._next_data()
  364         self._num_yielded += 1
  365         if self._dataset_kind == _DatasetKind.Iterable and \

/usr/local/lib/python3.6/dist-packages/torch/utils/data/dataloader.py in
_next_data(self)
  987         else:
  988             del self._task_info[idx]
--> 989             return self._process_data(data)
  990
  991     def _try_put_index(self):

/usr/local/lib/python3.6/dist-packages/torch/utils/data/dataloader.py in
_process_data(self, data)
  1012         self._try_put_index()
  1013         if isinstance(data, ExceptionWrapper):
-> 1014             data.reraise()
  1015         return data
  1016

/usr/local/lib/python3.6/dist-packages/torch/_utils.py in reraise(self)
  393         # (https://bugs.python.org/issue2651), so we work ar
ound it.
  394         msg = KeyErrorMessage(msg)
--> 395         raise self.exc_type(msg)

```

ValueError: Caught ValueError in DataLoader worker process 0.

Original Traceback (most recent call last):

```

File "/usr/local/lib/python3.6/dist-packages/torch/utils/data/_utils/w
orker.py", line 185, in _worker_loop
    data = fetcher.fetch(index)
File "/usr/local/lib/python3.6/dist-packages/torch/utils/data/_utils/f
etch.py", line 34, in fetch
    data = next(self.dataset_iter)
File "/usr/local/lib/python3.6/dist-packages/fastai2/data/load.py", li
ne 107, in create_batches
    yield from map(self.do_batch, self.chunkify(res))
File "/usr/local/lib/python3.6/dist-packages/fastcore/utils.py", line
299, in chunked
    res = list(itertools.islice(it, chunk_sz))
File "/usr/local/lib/python3.6/dist-packages/fastai2/data/load.py", li
ne 120, in do_item
    try: return self.after_item(self.create_item(s))
File "/usr/local/lib/python3.6/dist-packages/fastai2/data/load.py", li
ne 126, in create_item
    def create_item(self, s): return next(self.it) if s is None else se
lf.dataset[s]
File "/usr/local/lib/python3.6/dist-packages/icevision/data/dataset.p
y", line 38, in __getitem__
    data = self.tfm(data)
File "/usr/local/lib/python3.6/dist-packages/icevision/tfms/transform.
py", line 13, in __call__
    tfmed = self.apply(**data)
File "/usr/local/lib/python3.6/dist-packages/icevision/tfms/albumentat

```



```
ions/tfms.py", line 110, in apply
    d = self.tfms(**params)
  File "/usr/local/lib/python3.6/dist-packages/albumentations/core/composition.py", line 174, in __call__
    p.preprocess(data)
  File "/usr/local/lib/python3.6/dist-packages/albumentations/core/utils.py", line 62, in preprocess
    data[data_name] = self.check_and_convert(data[data_name], rows, cols, direction="to")
  File "/usr/local/lib/python3.6/dist-packages/albumentations/core/utils.py", line 70, in check_and_convert
    return self.convert_to_albumentations(data, rows, cols)
  File "/usr/local/lib/python3.6/dist-packages/albumentations/augmentations/bbox_utils.py", line 51, in convert_to_albumentations
    return convert_bboxes_to_albumentations(data, self.params.format, rows, cols, check_validity=True)
  File "/usr/local/lib/python3.6/dist-packages/albumentations/augmentations/bbox_utils.py", line 303, in convert_bboxes_to_albumentations
    return [convert_bbox_to_albumentations(bbox, source_format, rows, cols, check_validity) for bbox in bboxes]
  File "/usr/local/lib/python3.6/dist-packages/albumentations/augmentations/bbox_utils.py", line 303, in <listcomp>
    return [convert_bbox_to_albumentations(bbox, source_format, rows, cols, check_validity) for bbox in bboxes]
  File "/usr/local/lib/python3.6/dist-packages/albumentations/augmentations/bbox_utils.py", line 251, in convert_bbox_to_albumentations
    check_bbox(bbox)
  File "/usr/local/lib/python3.6/dist-packages/albumentations/augmentations/bbox_utils.py", line 330, in check_bbox
    "to be in the range [0.0, 1.0], got {value}.".format(bbox=bbox, name=name, value=value)
ValueError: Expected y_max for bbox (0.33458646616541354, 0.9720394736842105, 0.38721804511278196, 1.0674342105263157, 0) to be in the range [0.0, 1.0], got 1.0674342105263157.
```

In []:

```
learn.fine_tune(10, 1e-2, freeze_epochs=1)
```

In []:

In []:

In []:

In []:

In []: