

파일 수정 보기 삽입 런타임 도구 도움말 모든 변경사항이 저장됨

+ 코드 + 텍스트 ✓ RAM 디스크 수정 가능 ^

Nike vs Adidas vs Reebok (shoes)

I'm looking for Adidas shoes. Are these Adidas shoes? Tell me.

▼ 1. Setups

```
[35] #hide
!pip install -Uqq fastbook
import fastbook
fastbook.setup_book()

[36] #hide
from fastbook import *
from fastai.vision.widgets import *
```

▼ 2. Search & Download Images

```
[37] key = os.environ.get('AZURE_SEARCH_KEY', 'XXX')

[38] !pip install bing-image-downloader
from bing_image_downloader import downloader
for q in ["adidas shoes", "nike shoes", "reebokshoes"]:
    downloader.download(q, limit=1000, output_dir='shoes', adult_filter_off=True, force_replace=False, timeout=5)

[%] Downloading Image #985 from https://d2cd04b1ch85n8.cloudfront.net/wp-content/uploads/2020/01/Reebok-Forever-Floa
[%] File Downloaded !

[%] Downloading Image #986 from https://n4.sdlcdn.com/imgs/a/m/h/Reebok-Brown-Sport-Shoes-SDL436874765-5-be26c.JPG
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[%] Downloading Image #987 from https://n3.sdlcdn.com/imgs/a/m/h/Reebok-Navy-Sport-Shoes-SDL438723345-2-8aae.JPG
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[%] Downloading Image #988 from http://www.scorpionshoes.co.uk/footwear/REEBOK\_CLASSIC LEATHER\_49800\_BLACK\_GUM\_1.jpg
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[%] Downloading Image #989 from https://cdna.lystit.com/photos/06db-2014/11/18/reebok-black-mens-instapump-shaq-att
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[%] Downloading Image #990 from http://www.stylesglamour.com/wp-content/uploads/2015/01/Reebok-running-shoes-and-spo
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[%] Downloading Image #991 from https://d2cd04b1ch85n8.cloudfront.net/wp-content/uploads/2020/01/Reebok-Forever-Floa
[%] File Downloaded !

[%] Downloading Image #992 from http://cdna.lystit.com/photos/2012/07/24/reebok-blaze-yellow-white-realflex-speed-ru
[%] File Downloaded !

[%] Downloading Image #993 from http://4.bp.blogspot.com/\_DbIn2WRs5zs/S-12uoIywl/AAAAAAAD7w/bns\_4pc0SYU/s1600/reeb
[%] File Downloaded !

[%] Downloading Image #994 from http://www.dealnloot.com/wp-content/uploads/2015/01/amazon-reebok.jpg
[%] File Downloaded !

[%] Downloading Image #995 from http://c.shld.net/rpx/i/s/i/spin/-122/prod\_16446479912?hei=64&wid=64&qlt=50
[] Issue getting: http://c.shld.net/rpx/i/s/i/spin/-122/prod\_16446479912?hei=64&wid=64&qlt=50
[] Error:: timed out
[%] Downloading Image #995 from http://www.stylesglamour.com/wp-content/uploads/2015/01/Reebok-Sports-shoes-and-run
[%] File Downloaded !

[%] Downloading Image #996 from https://n2.sdlcdn.com/imgs/a/m/h/Reebok-Navy-Sport-Shoes-SDL437905561-1-58681.JPG
[%] File Downloaded !

[%] Downloading Image #997 from https://n4.sdlcdn.com/imgs/a/5/1/Reebok-Blue-Sport-Shoes-SDL609727944-1-44e22.jpg
[%] File Downloaded !

[%] Downloading Image #998 from https://n1.sdlcdn.com/imgs/a/7/m/Reebok-Gray-Sports-Shoes-SDL192253283-1-5253b.jpg
[%] File Downloaded !

[%] Downloading Image #999 from http://basketco.co.uk/eng\_pl\_Reebok-Classic-Leather-Shoes-2267-18006\_2.jpg
[%] File Downloaded !

[%] Downloading Image #1000 from http://www.stylesglamour.com/wp-content/uploads/2015/01/Reebok-running-shoes-and-sp
[%] File Downloaded !

[%] Done. Downloaded 1000 images.
```

▼ 3. Classification

```
[39] shoes_types = 'adidas', 'nike', 'reebok'
path = Path('shoes')

[40] if not path.exists():
    path.mkdir()
for o in shoes_types:
    dest = (path/o)
    dest.mkdir(exist_ok=True)
results = search_images_bing(key, f'{o} shoes')
download_images(dest, urls=results.attrgot('contentUrl'))

[41] fns = get_image_files(path)
fns

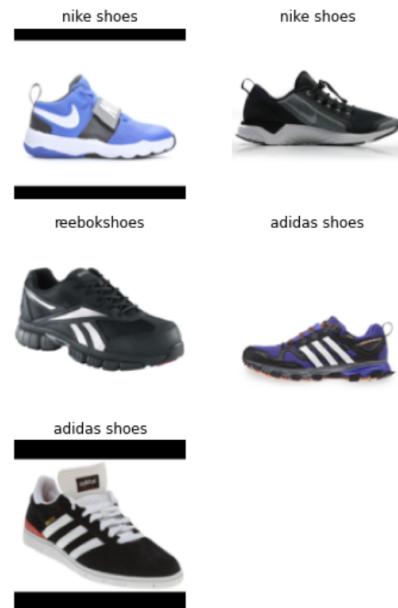
(#3048) [Path('shoes/nike shoes/Image_264.jpeg'), Path('shoes/nike shoes/Image_427.jpg'), Path('shoes/nike shoes/Image_4C
[42] failed = verify_images(fns)
failed

(#) []

[43] failed.map(Path.unlink)

[44] shoes = DataBlock(
    blocks=(ImageBlock, CategoryBlock),
    get_items=get_image_files,
    splitter=RandomSplitter(valid_pct=0.2, seed=42),
    get_y=parent_label,
    item_tfms=Resize(128))

[45] shoes = shoes.new(item_tfms=Resize(128, ResizeMethod.Pad, pad_mode='zeros'))
dls = shoes.dataloaders(path, bs=5)
dls.valid.show_batch(max_n=3000, nrows=3)
```



▼ 4. Train models

```
[46] shoes = shoes.new(item_tfms=Resize(128), batch_tfms=aug_transforms(mult=2))
dls = shoes.dataloaders(path)
dls.train.show_batch(max_n=100, nrows=5, unique=True)
```





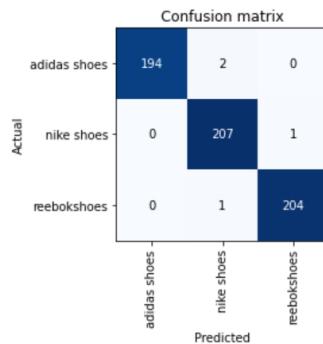
```
[47]: shoes = shoes.new(item_tfms=Resize(128), batch_tfms=aug_transforms(mult=2))
dls = shoes.dataloaders(path)
dls.train.show_batch(max_n=100, nrows=5, unique=True)
```



```
[48] shoes = shoes.new(
        item_tfms=RandomResizedCrop(224, min_scale=0.5),
        batch_tfms=aug_transforms())
dls = shoes.dataloaders(path)
```

```
/usr/local/lib/python3.6/dist-packages/PIL/Image.py:932: UserWarning: Palette images with Transparency expressed in I
  "Palette images with Transparency expressed in bytes should be "
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/usr/local/lib/python3.6/dist-packages/PIL/Image.py:932: UserWarning: Palette images with Transparency expressed in I
  "Palette images with Transparency expressed in bytes should be "
```

```
[50] interp = ClassificationInterpretation.from_learner(learn)
      interp.plot_confusion_matrix()
```



▼ 5. 10 images with the highest loss in dataset

```
[51] interp.plot_top_losses(10, nrows=10)
```

nike shoes/nike shoes / 0.09 / 0.92



reebokshoes/reebokshoes / 0.01 / 0.99



adidas shoes/adidas shoes / 0.00 / 1.00



reebokshoes/reebokshoes / 0.00 / 1.00



reebokshoes/reebokshoes / 0.00 / 1.00



reebokshoes/reebokshoes / 0.00 / 1.00



```
[52] class DataLoaders(GetAttr):
    def __init__(self, *loaders): self.loaders = loaders
    def __getitem__(self, i): return self.loaders[i]
    train,valid = add_props(lambda i, self: self[i])
```

```
[53] dls = shoes.dataloaders(path)
```

```
[54] dls.valid.show_batch(max_n=4, nrows=1)
```



▼ 6. Get Predictions of Your Images

```
[55] learn.export()
```

```
[56] path = Path()
    path.ls(file_exts='.pkl')
```

```
(#1) [Path('export.pkl')]
```

```
[57] learn_inf = load_learner(path/'export.pkl')
```

```
[58] learn_inf.predict('shoes.jpg')
```

```
('adidas shoes', tensor(0), tensor([9.6209e-01, 3.7914e-02, 8.7295e-08]))
```

```
[59] learn_inf.dls.vocab
```

```
['adidas shoes', 'nike shoes', 'reebokshoes']
```

```
[60] btn_upload = SimpleNamespace(data = ['shoes.jpg'])
```

```
[61] img = PILImage.create(btn_upload.data[-1])
```

```
[62] out_pl = widgets.Output()
    out_pl.clear_output()
    with out_pl: display(img.to_thumb(128,128))
    out_pl
```



```
[63] pred,pred_idx,probs = learn_inf.predict(img)
```

```
[64] lbl_pred = widgets.Label()
    lbl_pred.value = f'Prediction: {pred}; Probability: {probs[pred_idx]:.04f} '
    lbl_pred
```

```
Prediction: adidas shoes; Probability: 0.9621
```

```
[65] btn_run = widgets.Button(description='Classify')
    btn_run
```

```
Classify
```

```
[66] def on_click_classify(change):
    img = PILImage.create(btn_upload.data[-1])
    out_pl.clear_output()
    with out_pl: display(img.to_thumb(128,128))
    pred,pred_idx,probs = learn_inf.predict(img)
    lbl_pred.value = f'Prediction: {pred}; Probability: {probs[pred_idx]:.04f}'
```

```
btn_run.on_click(on_click_classify)
```

```
[67] btn_upload = widgets.FileUpload()  
[68] VBox([widgets.Label('Select your shoes!'),  
          btn_upload, btn_run, out_pl, lbl_pred])
```

Select your shoes!

Upload (0)

Classify



Prediction: adidas shoes; Probability: 0.9621