

```
In [84]: import os
import sys
sys.path.append('PythonAPI')
from pycocotools.coco import COCO

dataDir = 'coco' # cocoAPI
dataType = 'val2017' # 2017 challenge
instances_annFile = os.path.join(dataDir, 'annotations\instances_{}.json'.format(dataType))
coco = COCO(instances_annFile)

captions_annFile = os.path.join(dataDir, 'annotations\captions_{}.json'.format(dataType))
coco_caps = COCO(captions_annFile)

ids = list(coco.anns.keys()) #image ids

loading annotations into memory...
Done (t=0.85s)
creating index...
index created!
loading annotations into memory...
Done (t=0.04s)
creating index...
index created!
```

```
In [85]: import numpy as np
import skimage.io as io
import matplotlib.pyplot as plt
%matplotlib inline

ann_id = np.random.choice(ids)
img_id = coco.anns[ann_id]['image_id']
img = coco.loadImgs(img_id)[0]
url = img['coco_url']

# print(url)
I = io.imread(url)
plt.axis('off')
plt.imshow(I)
plt.show()

# load and display captions
annIds = coco_caps.getAnnIds(imgIds=img['id'])
anns = coco_caps.loadAnns(annIds)
coco_caps.showAnns(anns)
```



a person riding on a bicycle on the street in front of some cars
The cars are travelling behind the guy on the bicycle
a woman rides a bike in front of some cars
A woman on a bike rides on the street in front of cars.
A woman is riding her bike down the street in front of traffic.

```
In [94]: catIds = coco.getCatIds(catNms = ['car', 'bicycle'])
imgIds = coco.getImgIds(catIds=catIds)
```

```
In [95]: plt.imshow(I)
plt.axis('off')
annIds = coco.getAnnIds(imgIds=img['id'], catIds=catIds, iscrowd=None)
anns = coco.loadAnns(annIds)
coco.showAnns(anns)
```



```
In [88]: catIds = coco.getCatIds(catNms = ['person'])
imgIds = coco.getImgIds(catIds=catIds)
```

```
In [89]: plt.imshow(I)
plt.axis('off')
annIds = coco.getAnnIds(imgIds=img['id'], catIds=catIds, iscrowd=None)
anns = coco.loadAnns(annIds)
coco.showAnns(anns)
```



```
In [90]: annFile = '{}/annotations/person_keypoints_{}.json'.format(dataDir,dataType)
coco_kps=COCO(annFile)
```

loading annotations into memory...
Done (t=0.26s)
creating index...
index created!

```
In [91]: plt.imshow(I)
plt.axis('off')
ax = plt.gca()
annIds = coco_kps.getAnnIds(imgIds=img['id'], catIds=catIds, iscrowd=None)
anns = coco_kps.loadAnns(annIds)
coco_kps.showAnns(anns)
```



```
In [91]:
```