

image_segmentation

April 29, 2023

1 Segmenter une image pixel à pixel

Il est aujourd'hui assez facile de construire une boîte englobante autour d'un visage dans une image. Le deep learning permet d'extraire précisément les pixels du visage.

```
[1]: from jupyterhelper import add_notebook_menu
      add_notebook_menu()
```

```
[1]: <IPython.core.display.HTML object>
```

```
[2]: %matplotlib inline
```

1.1 Chargement du modèle

```
[3]: from code_beatrix.ai import DLImageSegmentation
      model = DLImageSegmentation(fLOG=print)
```

```
[DLImageSegmentation] download model 'FCN8s'
[DLImageSegmentation] [C:\Users\xavie\data\models\chainer/fcn8s_from_caffe.npz]
Checking md5 (256c2a8235c1c65e62e48d3284fbd384)
```

```
[DLImageSegmentation] load_npz
'C:\Users\xavie\data\models\chainer/fcn8s_from_caffe.npz'
[DLImageSegmentation] class_name '['background' 'aeroplane' 'bicycle' 'bird'
'boat' 'bottle' 'bus' 'car'
'cat' 'chair' 'cow' 'diningtable' 'dog' 'horse' 'motorbike' 'person'
'potted plant' 'sheep' 'sofa' 'train' 'tv/monitor']'
[DLImageSegmentation] cpu
```

1.2 Sur une petite image

```
[4]: img = 'images/Tesla_circa_1890c.jpg'
```

```
[5]: feat, pred = model.predict(img)
      pred.shape
```

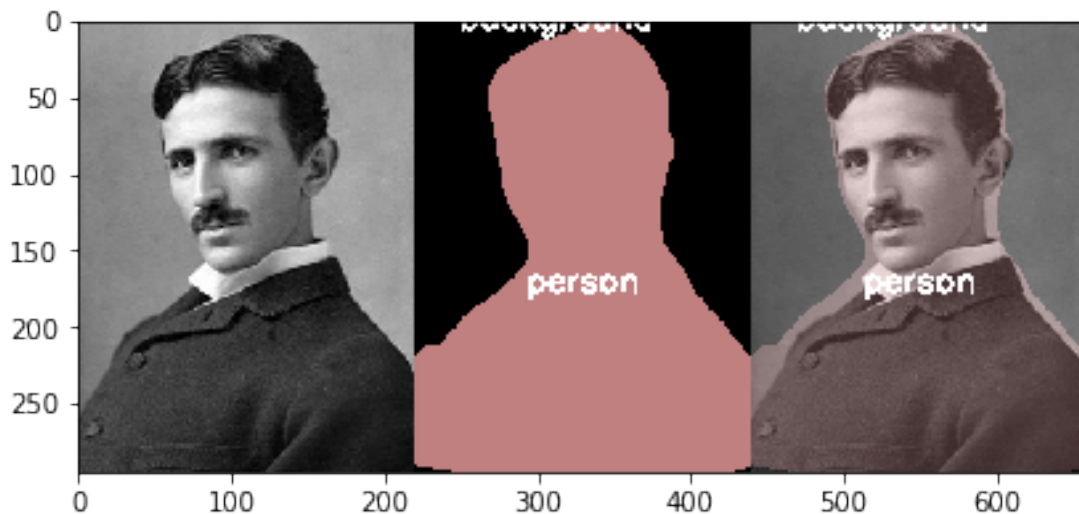
```
[5]: (295, 220)
```

```
[6]: viz = model.plot(img, pred) # img ou feat
```

```
c:\Python363_x64\lib\site-packages\skimage\transform\_warps.py:84: UserWarning:
The default mode, 'constant', will be changed to 'reflect' in skimage 0.15.
  warn("The default mode, 'constant', will be changed to 'reflect' in "
```

```
[7]: import skimage.io as skio
      skio.imshow(viz)
```

```
[7]: <matplotlib.image.AxesImage at 0x18000a1a8d0>
```



1.3 Sur une image dont on change la taille

```
[8]: from PIL import Image
      img = 'images/Tesla_circa_1890c.jpg'
      piling = Image.open(img)
```

```
[9]: si = piling.size
      piling2 = piling.resize((si[0]//2, si[1]//2))
```

```
[10]: from skimage.io._plugins.pil_plugin import pil_to_ndarray
```

```
[11]: skimg = pil_to_ndarray(piling2)
      skimg.shape
```

```
[11]: (147, 110, 3)
```

```
[12]: feat, pred = model.predict(skimg)
      pred.shape
```

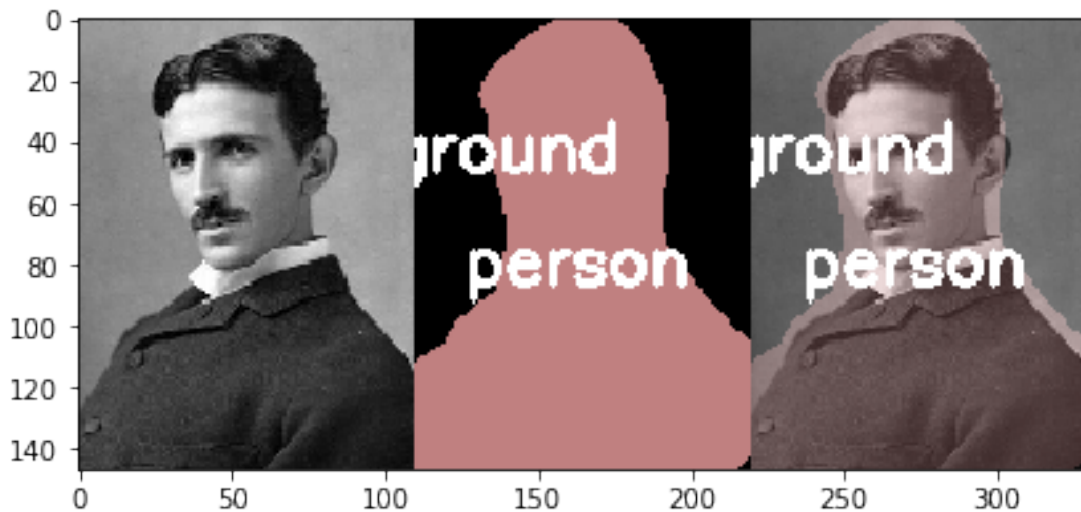
```
[12]: (147, 110)
```

```
[13]: viz = model.plot(skimg, pred)
```

```
c:\Python363_x64\lib\site-packages\skimage\transform\_warps.py:84: UserWarning:
The default mode, 'constant', will be changed to 'reflect' in skimage 0.15.
  warn("The default mode, 'constant', will be changed to 'reflect' in "
```

```
[14]: skio.imshow(viz)
```

```
[14]: <matplotlib.image.AxesImage at 0x18001a8bd68>
```



1.4 Sur une grande image

```
[15]: img = 'images/h2015_2.jpg'
```

```
[16]: pilimg = Image.open(img)
```

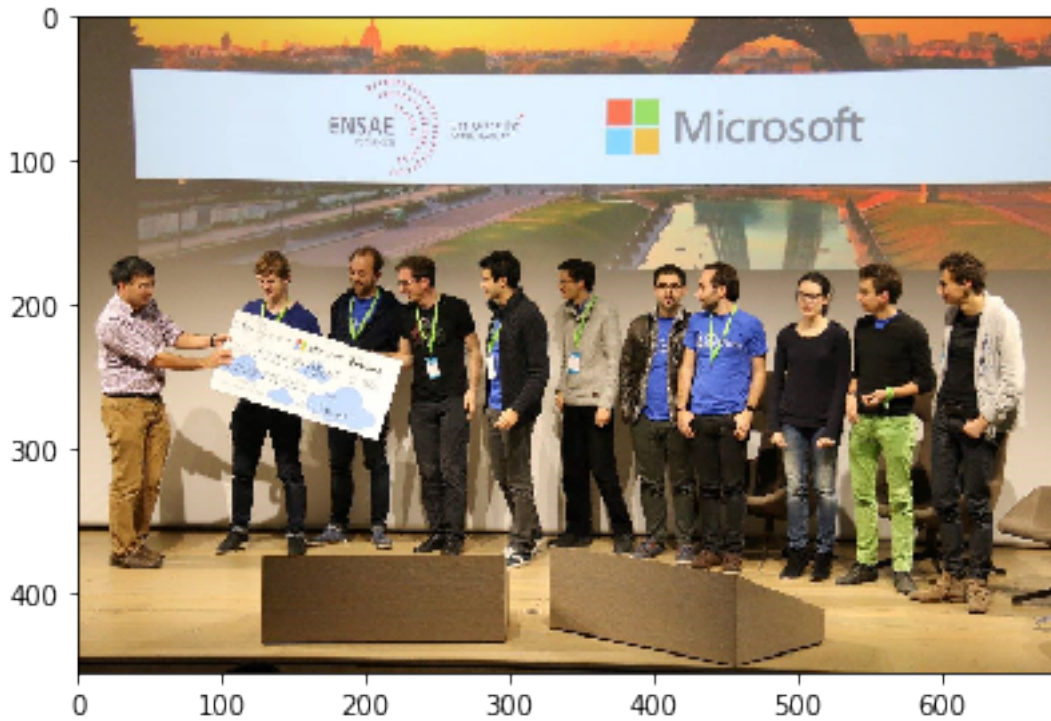
```
[17]: si = pilimg.size
      pilimg2 = pilimg.resize((si[0]//2, si[1]//2))
```

```
[18]: skimg = pil_to_ndarray(pilimg2)
      skimg.shape
```

```
[18]: (456, 684, 3)
```

```
[19]: skio.imshow(skimg)
```

```
[19]: <matplotlib.image.AxesImage at 0x1800210b9e8>
```



```
[20]: feat, pred = model.predict(skimg)
      pred.shape
```

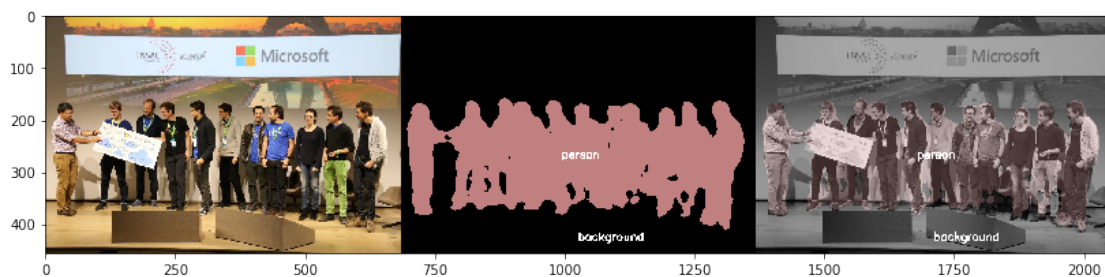
```
[20]: (456, 684)
```

```
[21]: viz = model.plot(feats, pred)
```

```
c:\Python363_x64\lib\site-packages\skimage\transform\_warps.py:84: UserWarning:
The default mode, 'constant', will be changed to 'reflect' in skimage 0.15.
  warn("The default mode, 'constant', will be changed to 'reflect' in "
```

```
[22]: import matplotlib.pyplot as plt
      fig, ax = plt.subplots(1, 1, figsize=(14, 12))
      ax.imshow(viz)
```

```
[22]: <matplotlib.image.AxesImage at 0x1800216b9e8>
```



[23] :