MainSolution

February 19, 2020

1 1.

: , .
: 512x512x3. : 512x512. : Dice coefficient.
: [?]

```
In [1]: import os
        os.chdir("..")

        import cv2
        import json
        import numpy as np
        import pandas as pd
        import matplotlib.pyplot as plt
        from PIL import Image

        from glob import glob

        from lib import *

        import getpass

        #password = getpass.getpass()
        #command_install_latex = "sudo -S apt-get install texlive-latex-extra"
        #os.system('echo %s | %s' % (password, command_install_latex))
        #command_install_bibtex = "sudo -S apt-get install texlive-bibtex-extra"
        #os.system('echo %s | %s' % (password, command_install_bibtex))
```

2 2.

2.1 2.1

, , .
:

- real_test 10 512x512x3;
- train/images 2000 512x512x3;

- train/coco_annotations.json COCO;
- val/images 200 512x512x3;
- val/coco_annotations.json COCO.

In [6]:
```
from itertools import repeat, cycle

path = "data/train"
images = os.listdir(f"{path}/images")
annotations = json.load(open(f"{path}/coco_annotations.json", "r"))
img_ids = list(repeat(int(np.random.choice(images).split(".")[0]), 5))

for i in range(5):
    img = np.array(Image.open(f"{path}/images/{img_ids[i]:08}.jpg"))
    mask = get_mask(img_id, annotations)
    show_img_with_mask(img, mask)
```




2.2 2.2

2 , :

- valid pred_valid_template.csv
- html real_test html .

3 3.

3.1 3.1

3.1.1 :

- Rotation
- Padding UNet type architecture require input image size be divisible by 2^N, where N is th enumber of the maxpooling layers. In the vanilla UNet $N = 5 \Longrightarrow$ we need to pad input images to the closest divisible by $2^5 = 32$ number which is 128. This operation may be performed using PadIfNeeded transformation. Which pads both image and mask on all four sides. Padding type (zero, constant, reflection) may be specified. Default padding is reflection padding.

3.1.2 :

- Non-rigid transformations(ElasticTransform, GridDistortion, OpticalDistortion): , ,

3.1.3 :

- Blur, : -

3.2 3.2

3.2.1 :

- U-Net (*U-Net: Convolutional Networks for Biomedical Image Segmentation O. Ronneberger, P. Fischer, and T. Brox. page 234--241. Springer International Publishing, Cham, (2015)*)
- RetinaNet
- Mask- RCNN

3.3 4.

```
In [ ]:
```