part2

September 13, 2020

[5]:
```
import sys
import os
import numpy as np
import cv2
from collections import namedtuple
import matplotlib.pyplot as plt

work_path, d = ('C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1',
 'C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav')
os.chdir(d)

def image_transformations(path):
        os.mkdir("transform_images")
        i = 0

        for img in os.listdir(path):
                imgpath = os.path.join(path, img)
                image = cv2.imread(imgpath)
                gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)  # grayscale
                gray = cv2.medianBlur(gray, 3) #smoothing
                _, thresh = cv2.threshold(gray, 150, 255, cv2.
 ↪THRESH_BINARY_INV)  # threshold
                kernel = cv2.getStructuringElement(cv2.MORPH_CROSS, (3, 3))␣
 ↪#morphological transformation
                dilated = cv2.dilate(thresh, kernel, iterations=1)  # dilate
                _,contours, hierarchy = cv2.findContours(dilated, cv2.
 ↪RETR_EXTERNAL, cv2.CHAIN_APPROX_NONE)  # get contours

                for c in contours:
                        [x, y, w, h] = cv2.boundingRect(c)
                        # discard areas that are too large
                        # discard areas that are too small
                        if h < 15 or w < 15:
                                continue
                        if h > 1500 or w > 1500:
                                continue
```

```
                        # draw rectangle around contour on original image
                        cv2.rectangle(image, (x, y), (x + w, y + h), (255, 0,␣
↪255), 2)

                cv2.drawContours(image, contours, -1, (255, 255, 0), 3)
                image = cv2.resize(image, (1020, 720))
                print(image)
                cv2.imwrite(path+"\\"+"transform_images"+"\\"+str(i)+"contours.
↪png",image)
                i = i+ 1
```

[11]:
```
def image_transformations(path):
    os.mkdir(path+"\\"+"transform_images")
    i = 0

    for img in os.listdir(path):
        imgpath = os.path.join(path, img)
        image = cv2.imread(imgpath)
        image = image.astype('uint8')

        gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY) # grayscale
        gray = cv2.medianBlur(gray, 3) #smoothing
        _, thresh = cv2.threshold(gray, 150, 255, cv2.THRESH_BINARY_INV) #␣
↪threshold
        kernel = cv2.getStructuringElement(cv2.MORPH_CROSS, (3, 3))␣
↪#morphological transformation

        dilated = cv2.dilate(thresh, kernel, iterations=1) # dilate
        _,contours, hierarchy = cv2.findContours(dilated, cv2.RETR_EXTERNAL,␣
↪cv2.CHAIN_APPROX_NONE) # get contours

        for c in contours:

            [x, y, w, h] = cv2.boundingRect(c)
            if h < 15 or w < 15:
                continue
            if h > 1500 or w > 1500:
                continue

                # draw rectangle around contour on original image
            cv2.rectangle(image, (x, y), (x + w, y + h), (255, 0,255), 2)

        cv2.drawContours(image, contours, -1, (255, 255, 0), 3)
        image = cv2.resize(image, (1020, 720))
        cv2.imwrite(path+"\\"+"transform_images"+"\\"+str(i)+"contours.
↪png",image)
```

```
        i = i+ 1
```

[ ]:
```
image_transformations(path)
```

[14]:
```
work_path = "C:
 ↪\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images"

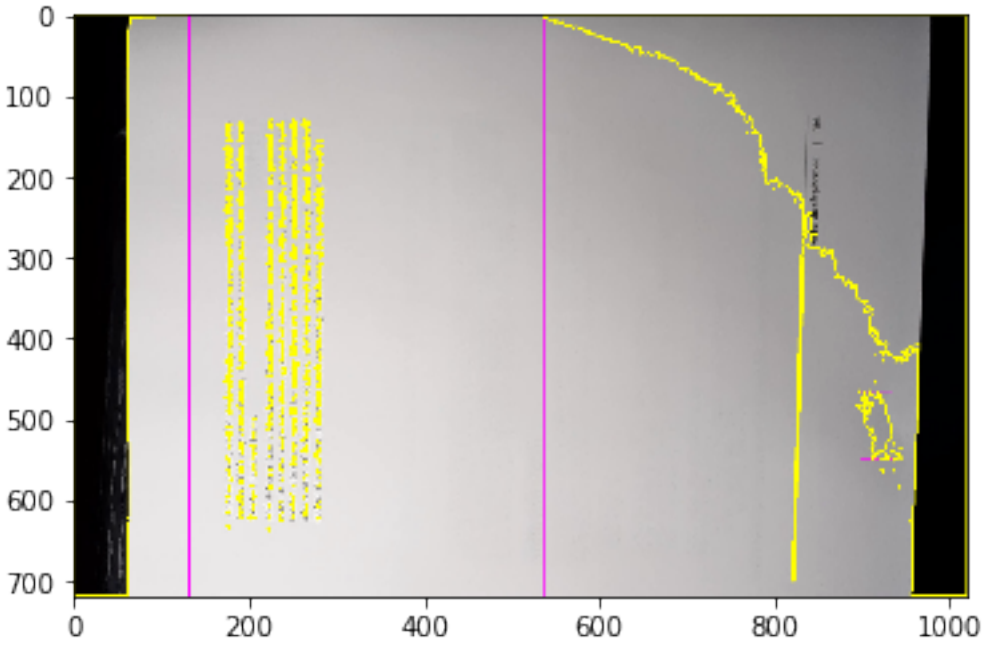
import random
images = []

for i in os.listdir(work_path):
    images.append(os.path.join(work_path,i))

def visualize_transformed_images(path, images):
    fig, ax = plt.subplots()
    img_names = random.sample(images, 1)
    print(img_names)
    img1 = cv2.imread(img_names[0])
    #img1 = cv2.resize(img1, (img_w, img_h))
    #img2 = cv2.resize(img2, (img_w, img_h))
    ax.imshow(img1)
    ax.set_aspect('auto')
    plt.show()
```

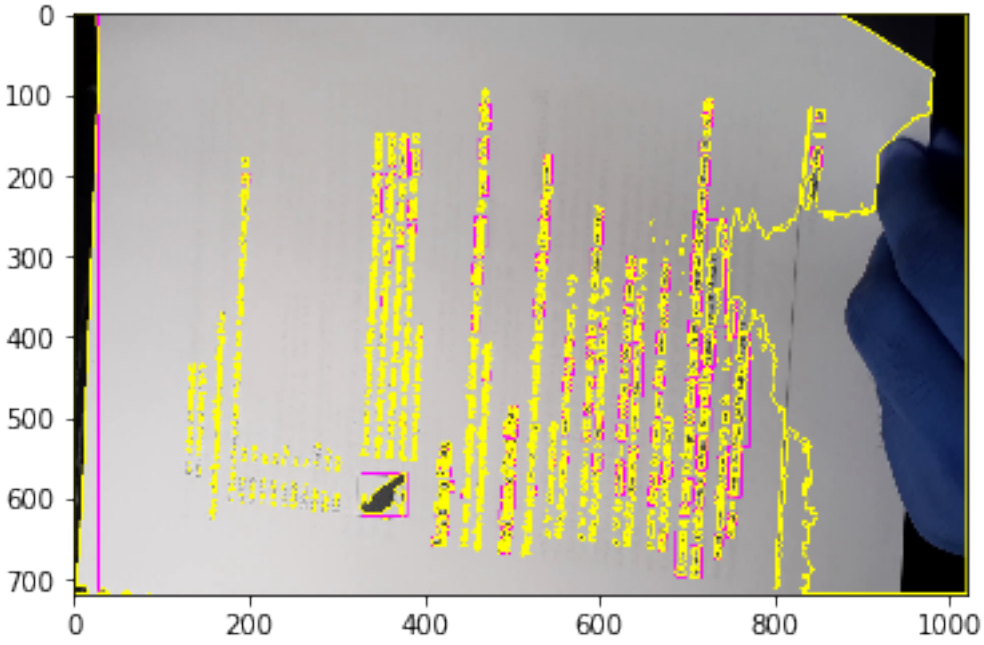
[15]:
```
visualize_transformed_images(work_path, images)
```

```
['C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images
\\52contours.png']
```



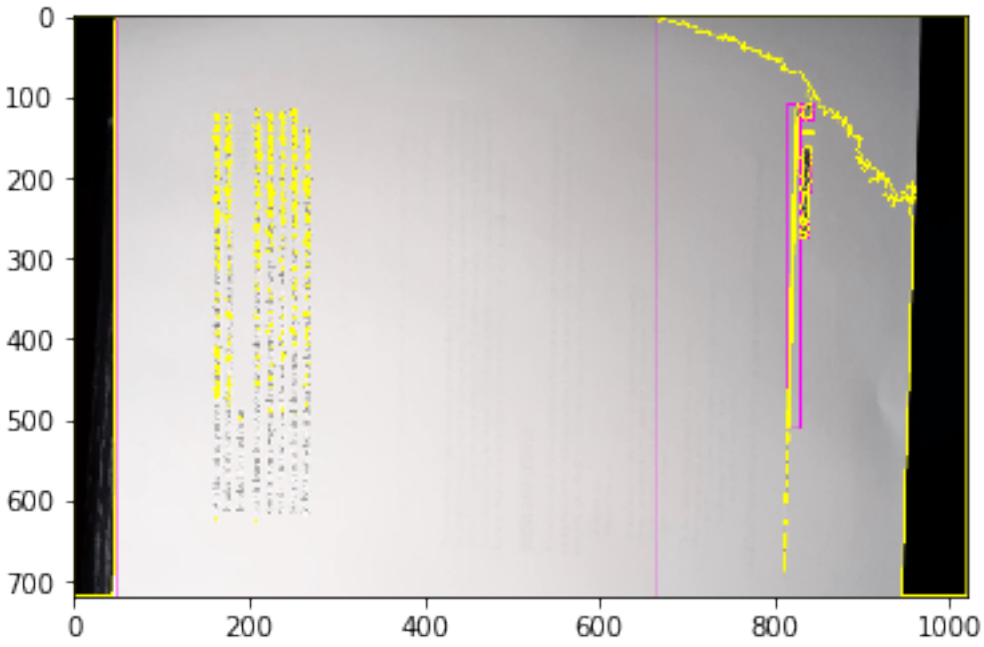
[16]:
```
visualize_transformed_images(work_path, images)
```

```
['C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images
\\42contours.png']
```



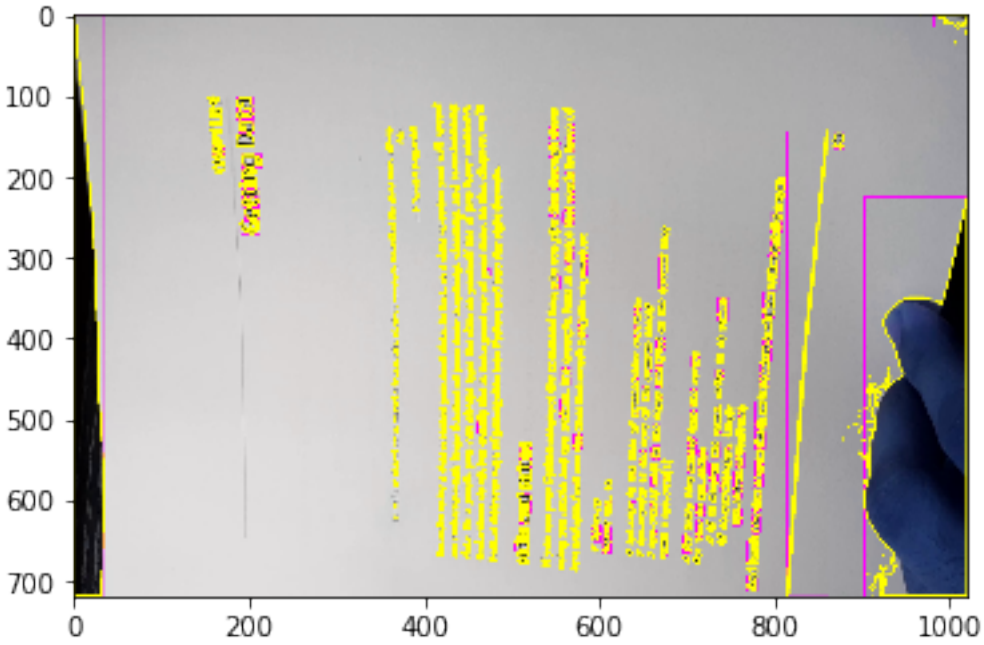
[17]:
```
visualize_transformed_images(work_path, images)
```

```
['C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images
\\49contours.png']
```



[18]:
```
visualize_transformed_images(work_path, images)
```

```
['C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images
\\24contours.png']
```



[19]:
```
visualize_transformed_images(work_path, images)
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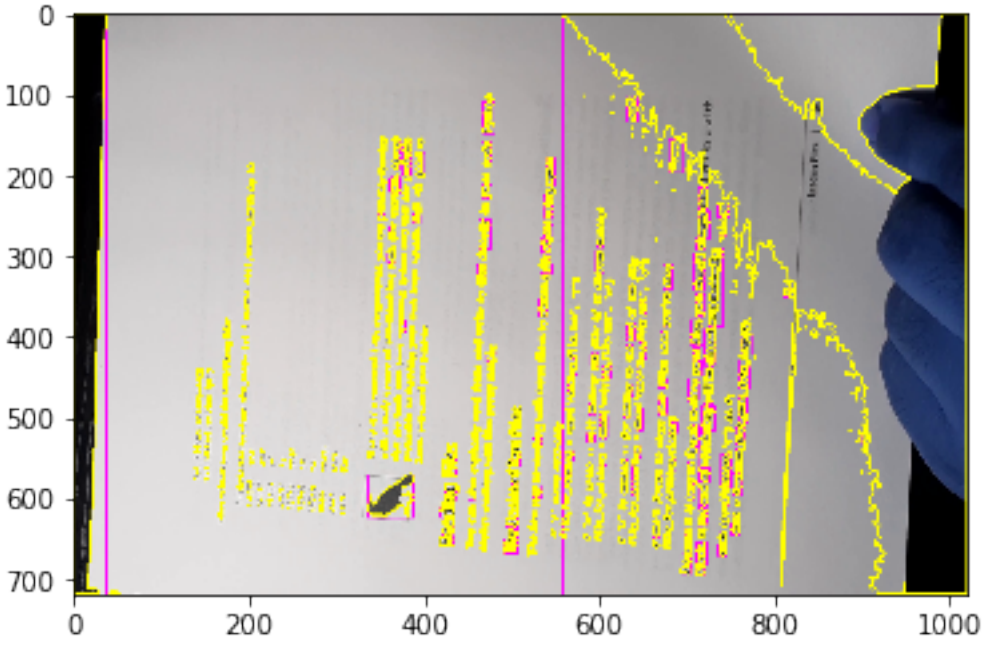
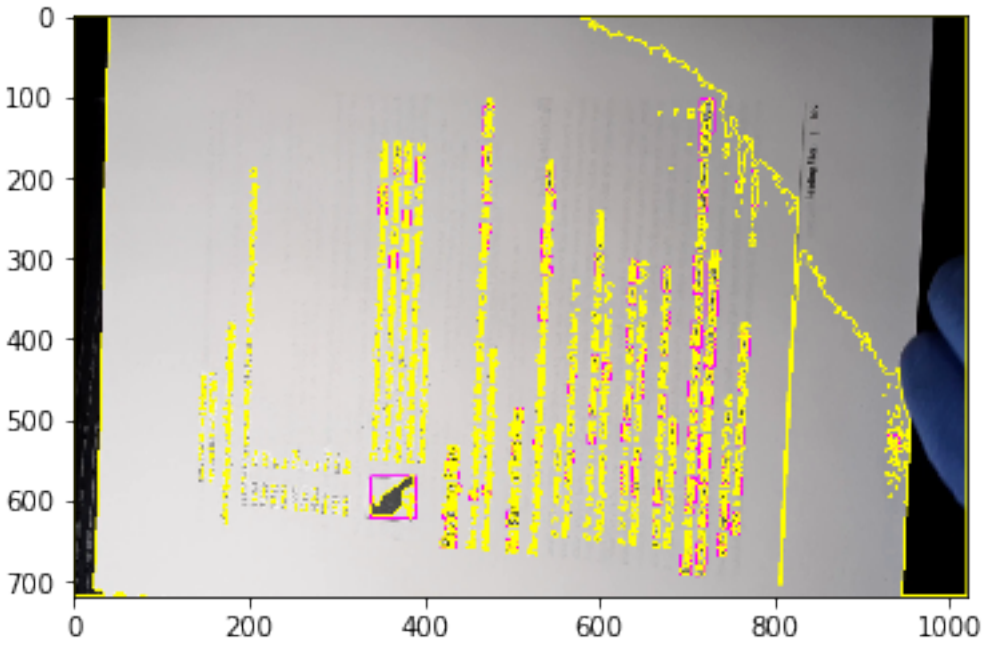
```
['C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images
\\38contours.png']
```



[20]:
```
visualize_transformed_images(work_path, images)
```

```
['C:\\Users\\Anshul\\OneDrive\\Desktop\\Gaurav\\frames_video_1\\transform_images
\\35contours.png']
```



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