Text Detection from a image

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Course - AI & ML
(Batch - 4)

Duration - 12 Months

Problem Statement - Implement a text detection and extraction model using OpenCV and OCR

Prerequisites -

 What things you need to install the software and how to install them:

Python 3.6 This setup requires that your machine has the latest version of python. The following URL https://www.python.org/downloads/ can be referred to as download python.

The second and easier option is to download anaconda and use its anaconda prompt to run the commands. To install anaconda check this URL https://www.anaconda.com/download/ You will also need to download and install the below 3 packages after you install either python or anaconda from the steps above Sklearn (scikit-learn) numpy scipy if you have chosen to install python 3.6 then run the below commands in command prompt/terminal to install these packages pip install -U sci-kit-learn pip install NumPy pip install scipy if you have chosen to install anaconda then run the below commands in anaconda prompt to install these packages conda install -c sci-kit-learn conda install -c anaconda numpy conda install -c anaconda scipy.
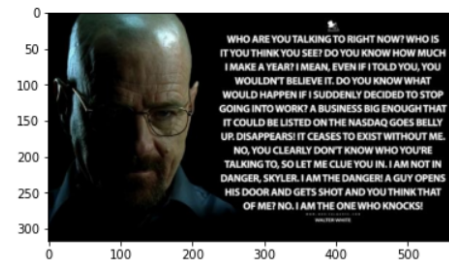
1. Importing necessary libraries-

```python
import cv2
import pytesseract
import matplotlib.pyplot as plt
```

2. Loading the image-

```python
img = cv2.imread('img1.jpg')
img_p = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
```

```python
plt.imshow(img_p)
```

```
<matplotlib.image.AxesImage at 0x27ad9ef31c0>
```
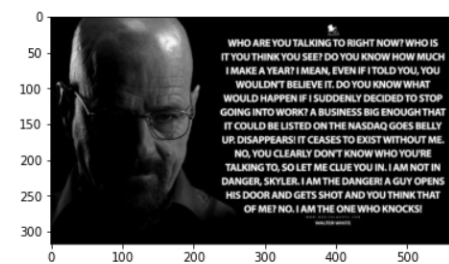

3. Convert image to grayscale-

```python
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
plt.imshow(gray, cmap = 'gray')
```

```
<matplotlib.image.AxesImage at 0x27ad99dab50>
```
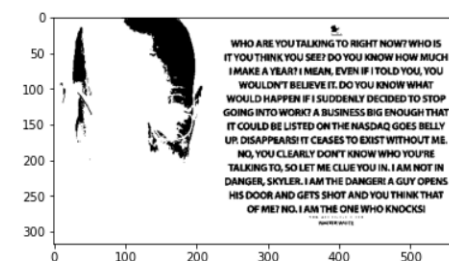

4. Otsu Thresholding-

```python
ret, thresh1 = cv2.threshold(gray, 0, 255, cv2.THRESH_OTSU | cv2.THRESH_BINARY_INV)
```

```python
ret
```

```
99.0
```

```python
plt.imshow(thresh1,cmap='gray')
```

```
<matplotlib.image.AxesImage at 0x27ad9e9be80>
```


5. Definfig a kernel, Applying Dilation to the image and finding contours-

```python
rect_kernel = cv2.getStructuringElement(cv2.MORPH_RECT, (20, 20))
```

```python
dilation = cv2.dilate(thresh1, rect_kernel, iterations = 10)
```

```python
contours, hierarchy = cv2.findContours(dilation, cv2.RETR_EXTERNAL, cv2.CHAIN_APPROX_NONE)
```

6. Apply OCR -

```python
for cnt in contours:
    x, y, w, h = cv2.boundingRect(cnt)

    rect = cv2.rectangle(img, (x, y), (x + w, y + h), (0, 255, 0), 2)

    cropped = img[y:y + h, x:x + w]

    text = pytesseract.image_to_string(cropped)
    ##print(len(text))
    if len(text) > 1:
        print(text)
```

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*
WHO ARE YOU TALKING TO RIGHT NOW? WHOIS,
ITYOU THINK YOU SEE? DO YOU KNOW HOW MUCH
IMAKE A YEAR? I MEAN, EVEN IF ITOLD YOU, YOU
WOULDN'T BELIEVE IT. DO YOU KNOW WHAT
WOULD HAPPEN IF | SUDDENLY DECIDED TO STOP.
GOING INTO WORK? A BUSINESS BIG ENOUGH THAT
IT. COULD BE LISTED ON THE NASDAQ GOES BELLY.
UP. DISAPPEARS! IT CEASES TO EXIST WITHOUT ME.
NO, YOU CLEARLY DON'T KNOW WHO YOU'RE
'TALKING TO, SO LET ME CLUE YOU IN. AM NOT IN
DANGER, SKYLER. | AM THE DANGER! A GUY OPENS.
HIS DOOR AND GETS SHOT AND YOU THINK THAT
(OF ME? NO. AM THE ONE WHO KNOCKS!