OpenCV - OCR (Optical Character Recognition)

Introduction:

- Created a Text recognition model using opencv and ocr space api,which detects the text when a particular image is captured by the camera.
- **OCR** (Optical character recognition) is the **process by which the computer recognizes the text from an image**.
- ocr.space is an OCR engine that offers free API.
- It means that is going to do pretty much all the work regarding text detection. We only need to send through their API an image with the text we want to scan, and it will return us the text scanned.

Installations required:

```
pip install opencv-python
pip install random
pip install json
pip install requests
```

- `check that your pip command is updated.`

overview of the project:

- Created a Text recognition model through OpenCV and OCR API.
- Optical character can be detected through the webcam.
- This project completely works on OpenCV commands and Inbuilt functions within OpenCV library.
- We have to capture a live image with a camera. OpenCV provides a very simple interface to do this. Capture an image from the camera (I am using the built-in webcam on my laptop)
- To capture a video or an image, you need to create a Video Capture object "`cv2.VideoCapture(0)`"
- Its argument can be either the device index or the name of a video file or parameters. A device index is just the number to specify.

- `webcam.read()` returns a bool (True/False). If the frame is read correctly, it will be True.
- Creating a waitkey() 's' such that when we press 's',it captures the image and processes it.
- Generating a random distribution with numpy and converting them into characters using str() function and storing them in a particular variable and using that string converted data for training of the imagefile as we are interested text recognition..
- Now our img_file is completely of random generated text like we usually do in our ML models,first we train and then test .So here our img_file acts as a training data and here our test data are the words which are shown through our webcam.
- After that create a file ,name it so on called "data" ,store your img_file in that.
- So after that read the image file with cv2.imread() function to get the view of the image.
- When everything is done, release the capture webcam using webcam.release(),camera off.
- cv.destroyAllWindows().
- In the nextstep using an OCR API ,what is the OCR API? This **OCR API** provides a simple way of parsing images and multi-page PDF documents (PDF **OCR**) and getting the extracted text results .
- So using an url of ocr .space api for getting our results and in the next step ,Compressing the image using custom size and setting up the language to English .
- Therefore this url_api gets our predicted result from api.ocr.space and we decode that result using.decode function ,as the result will return a string format,so to use a dictionary using json (import json).
- After that dont make a mistake without selecting array index,as it is the array with only one value
- At the end created a text file for storing the text ,which is shown through the webcam by the user i.e predicted output by our api.

Resources used:

- Packages:cv2,time,requests,io,json,random

- https://www.pyimagesearch.com/category/tutorials/

Thank you..