A Project Report On

"Calculator Using OpenCV"

Submitted By

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Abstract:

This project involves making use of OpenCV to recognize the expression in an input image and then solve it and then display the right answer. We used Python as our programming language and Google's Tesseract as the OCR Engine on this project.

We temporarily concluded this project by using a locally stored image and then processing it. In the future we are going to use the image captured from the webcam instead of a locally stored image. Also, we are going to expand the extent of calculation to higher level equations that involve up to even calculus.

Code:

```
#import required Libraries


from typing import Text
import cv2 as cv
import pytesseract
import numpy as np


def ocr_core(img):
    text=pytesseract.image_to_string(img)
    return text


img=cv.imread(r'C:\Users\Acer\Desktop\opencv_calculator_test\test.png')


# get_grayscale image
def get_grayscale(image):
    return cv.cvtColor(image, cv.COLOR_BGR2GRAY)


# noise removal
def remove_noise(image):
    return cv.medianBlur(image,5)


#thresholding
def thresholding(image):
    return cv.threshold(image, 0,255, cv.THRESH_BINARY + cv.THRESH_OTSU)[1]


img = get_grayscale(img)
```

```
#img = remove_noise(img)

img = thresholding(img)

img = remove_noise(img)


print(ocr_core(img))

print(eval(ocr_core(img)))
```

References:

1.1. **https://github.com/EvilPort2/Simple-OpenCV-Calculator**
1.2. **https://github.com/noorkhokhar99/Digit-Recognition**
1.3. **https://docs.opencv.org/master/d9/df8/tutorial_root.html**
1.4. **https://www.pyimagesearch.com/2018/09/17/opencv-ocr-and-text-recognition-with-tesseract/**
1.5. **https://blog.ayoungprogrammer.com/2013/01/equation-ocr-part-1-using-contours-to.html**