University at Buffalo

CSE 473/573 – Computer Vision and Image Processing

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Project 1 - Optical Character Recognition

Step 1 – Enrollment

The characters provided were enrolled. I resized the shape of the characters and saved in a file "Resizedpixel". Implementing a while loop and passing all the 5 test characters to it and then I defined a count variable and then I incremented the count by one for every character's index.

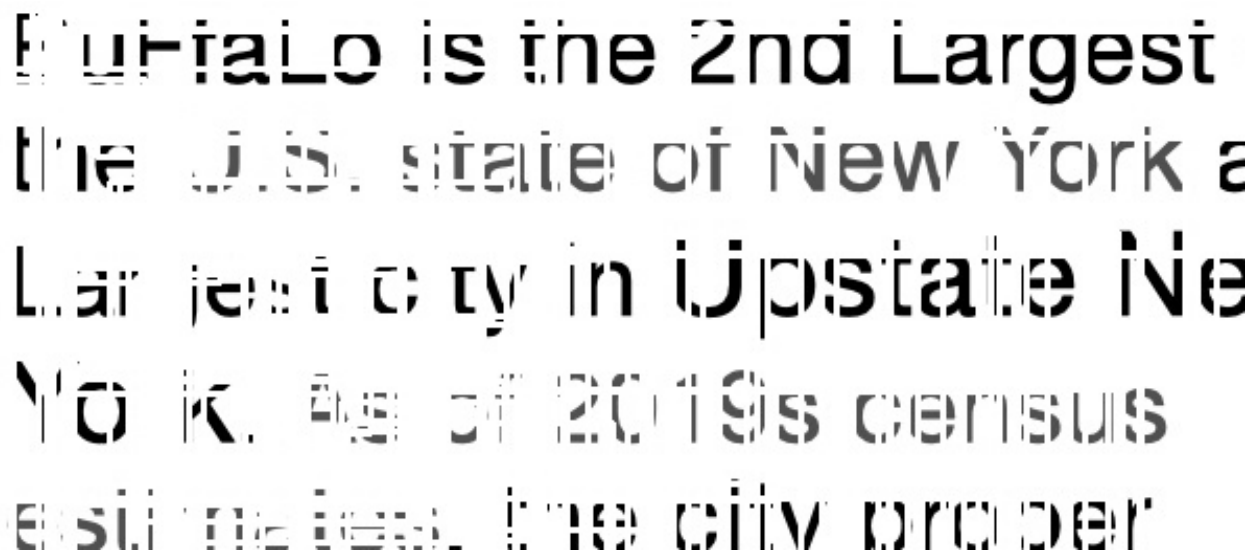
Step 2- Detection

Implemented a CCL module to identify different images and their bounding boxes from the test image.
Later I have differentiated into a background pixel (test_img[test_img<=127] = 0) and a foreground pixel (test_img[test_img>127] = 1). Then I applied the first pass of CCL to mark all the foreground pixel point. I have used four connected labeling for detection of each character in the first pass of CCL. Then I cropped each character from the test image and generated a bounding box over it. The bounding box parameters were returned to OCR function.

Step 3 – Recognition

For recognition I implemented the Nomalized Cross Correlation Coefficient(NCC). This was done for template matching between the test characters and the characters in the test image. I experimented with different threshold values and finally decided that a threshold of 0.47 value gave me the best output and saved it in a results.json file.

Recognition Result:



Evaluation Result: After passing my 'results.json' file I got the F1 score as **'0.3137254901960784'.** I was not able to achieve a better accuracy.