

CSE 573 Computer Vision and Image Processing: Project 1 Report

Enrollment

- First, I binarized all the character images from character list. Then, I extracted characters from image and stored in a dictionary. I multiplied each character pixel by 255 so that it can be detected by canny edge detector.
- Using canny edge detector and setting lower and higher threshold 100 and 200 respectively, I extracted edges of characters and store those features(edges) into a dictionary. The return function of enrollment is a dictionary with key as character name and value as their features.

Detection

- First, I binarized the test image. Then using connected component labeling, I labeled all the characters in the test image. Then I created bounding box around all labeled characters to specify their location in test image. I stored bounding box with respective label in a dictionary.
- I extracted all the labels from the labeled image and stored them in a dictionary as per English text reading method. I set pixel values of all labels 255 so that it can be detected by canny edge detector.
- The detection function returns dictionary of detected labels and a dictionary of bounding box.

Recognition

- For each label detected in detection part, I extracted edges using canny edge detector. Then I compared features of the label and all enrolled characters by resizing enrolled character features.
- I performed matching using sum of squared difference (SSD). By analyzing minimum error (SSD) of recognized characters I set threshold to 0.27.
- Using evaluate.py I calculated F1 score which is 0.8.

```
PS C:\Users\abhis\Box\Spring22_sem\CVIP\Projects\Project1> & C:/Users/abhis/AppData/Local/Programs/Python/Python37/python.exe c:/Users/abhis/Box/Spring22_sem/
/CVIP/Projects/Project1/evaluate.py
0.8
```