

CS 270 Digital Image Processing

Project 4 License plate reading

Due date: Dec. 29th, 2019

TA: 陈宏博 chenhb@shanghaitech.edu.cn

License plate reading



Expected results:

381Z
32701
X10H
56DYG
28VFB

...

Assignment

Please use traditional image processing method to do this project, DO NOT use any method about Machine learning. Note that the methods used should be run automatically.

1. License Plate Detection

Extract the license plate. (The number of license plates detected ≥ 30)

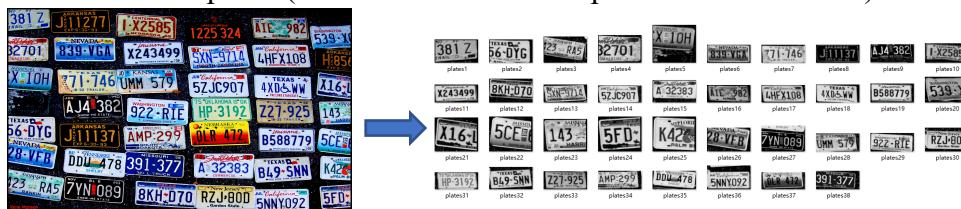


Fig.1. An example of License Plate Extraction Result.

Note: Use a new folder to save your result.

2. Character Segmentation and Recognition

Extract characters from license plates and recognize the characters by using given templates.



Fig.2. An example of Character Segmentation and Recognition Result.

One of two following marked license plates should be fully recognized.



Fig.3. Two marked license plates.

Note: Use a new folder to save your result.

3. (Optional, 25Point)

(1) Discuss different methods to extract the license plate.

(2) Improve the assignment 2 to get better Correct Rate.

Correct Rate is defined as follows,

$$Correct\ Rate = \left(\sum_{i=1}^N \frac{Recongized\ characters}{Total\ number\ of\ characters\ in\ one\ license\ plate} \right) / N \times 100\%$$

Where N denotes the total number of license plates. If a license plate is not detected, the accuracy of the license plate is 0.

In order to get better correct rate, you can

- (1) Try some preprocessing before segmentation and recognition, such as skew correction...
- (2) Try some different recognition methods/matching methods...
- (3) ...

Code requirement

1. There needs to be a main function in your code.
2. Key comments cannot be missing.
3. Please use the Relative Path to load data and templates.

```
% main.m
%%
%% load data
f = imread("./Data/License_plates.jpg");
%%
%% Pre-processing (If you use it)

%%
%% License Plate Detection
DetectLicensePlate();

%%
%% Character Segmentation
SegmentCharacter();

%%
%% Character Recognition
RecognizeCharacter();
```

Submission

Project4_YoursNames.zip file containing the following files:

- Two folders containing the result of assignment 1 and 2, respectively. One folder containing original image and templates.
- “Project4_main.m and others.m” for code.
- “Project4_Report_YoursNames.pdf” for report
- “Project4_PPT_YoursNames.ppt” for presentation ppt