646 Pattern Recognition & Classfic Project

License Plate Number Recognition

With Convolutional neural network

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Abstract:

Nowadays, automobiles almost become basic things for every family in their daily life. Thus, find an efficient way to recognize and classify every automobile is very important, especially in a public place like: garage, highway,etc.

My project is designed to recognize the license plate number of the automobiles' license plates.

Approaches:

My project's goal is to identify the license plate number. In order to identify the license plate number, it's important to localization the place of licence plate and crop that region. My project only includes the OCR part, thus i only used licence plate picture to train my model.

My training model is mainly built base on the keras library and followed the algorithm of Convolutional neural network. Using the database from openalpr https://github.com/openalpr/benchmarks/tree/master/endtoend/ to train my model. I trained and tested my model using US part. So it might be more accurate predict the number with us license plate.

Fig.1 Training Process

After that, I have used my trained model to check the number in the preload test file. In order to load the trained model, I have used darknet libraries.

Fig.2 OCR Detector

The photos I used to test are the front and close view of the license plate which are from google images:

Fig3. Test image example

As you can see letter '1' has not been detected by the OCR. And It will also be inaccurate with the picture with the side or unclear view of the license plates.
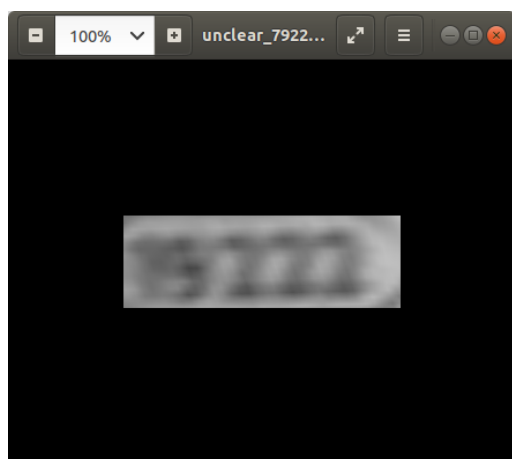

Fig4.Unclear License Plate

Fig5. Results of the unclear and side view of the license plate

The code has been uploaded to https://github.com/Chappelliu/646project

Reference:

1.Silva S.M., Jung C.R. (2018) License Plate Detection and Recognition in Unconstrained Scenarios. In: Ferrari V., Hebert M., Sminchisescu C., Weiss Y. (eds) Computer Vision – ECCV 2018. ECCV 2018. Lecture Notes in Computer Science, vol 11216. Springer, Cham

2.CRNN Recognition https://github.com/qjadud1994/CRNN-Keras

3.Text Detector https://github.com/qjadud1994/Text_Detector