Number Plate Recognition system

Group B

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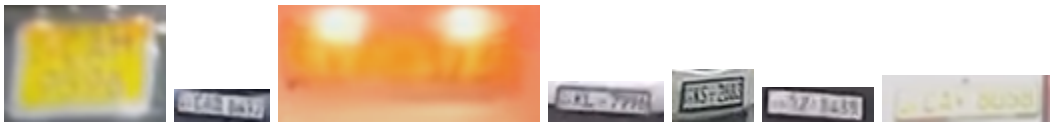
Introduction

With increasing the population the vehicles on the roads also increase. Because of this reason it is very difficult to maintain the laws of traffic manually. To have a good flow in the traffic it is necessary to have automated systems rather than using manual conventional methods. In the world, all registered vehicles should have registered number plates issued by the government. These plates can be used to uniquely identify the particular vehicle when it is required.

So the number plate detection system will be very useful in the present. By now there are many systems to detect number plates, but many systems fail to detect those number plates because of no proper illumination, blurry images, low light conditions, shadowning, reflection, motion defects, rotation and also some plates are damaged. So our plan is to implement a number plate recognition system that will overcome the mentioned problems.

Problem statement

We consider vehicle number plate images as input.The input images consist of very low resolution, heavily distorted, blurred and illuminated images. In the following images the human eye cannot recognize the content in the number plate exactly. Following are some of the input images to the system. Our expectation is that the system should enhance the images and identify the number plates clearly.



Dataset

We are using the given 24 distorted images to test our system. The set of images are contained with low light conditions, shadowing, reflection, blurring, motion defects, rotations, etc. We expect to identify the content in those images properly by using our system.

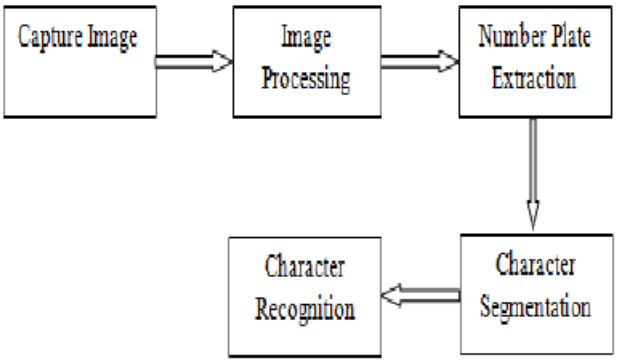
Expected Results

The final expectation is to identify the exact content in the distorted images.

Evaluation

We give the distorted image as input and the system will return the exact content in the number plate as the final result.

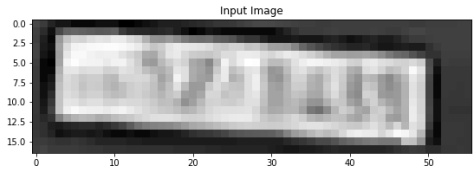
Technical Approach

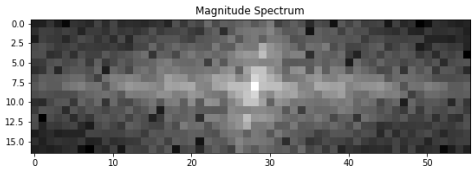


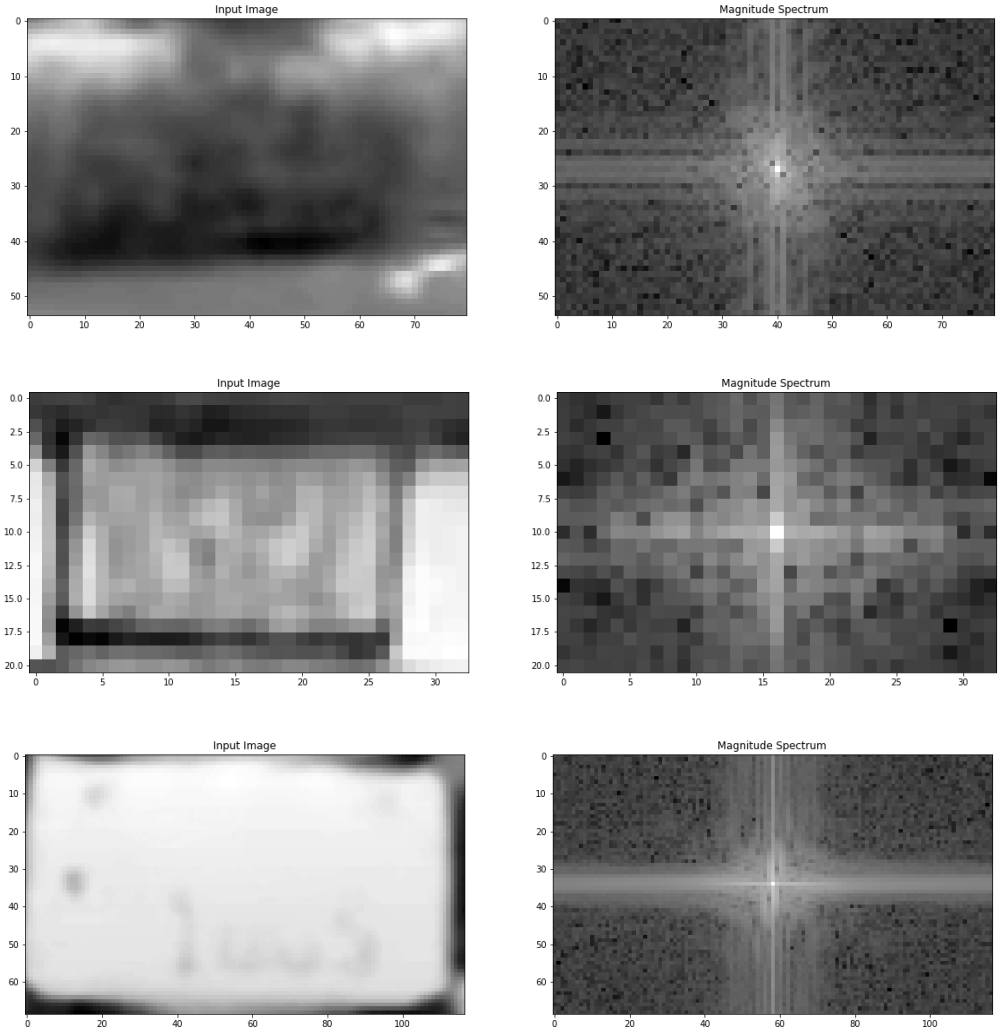
- Initially we capture the image.
- Then we apply image processing techniques.
    - Here we use fourier domain analysis.
    - We use some filtering techniques also to enhance the distorted image.
- Then we extract the content in the number plate. Now the content is much clearer than the original distorted image.
- Next we segment the characters in the number plate that locates the alphanumeric characters on a number plate.
- The segmented characters are then translated into an alpha numeric text entry using the optical character recognition (OCR) techniques.

Intermediate/Preliminary Results

We obtained the magnitude spectrum of input images and we identified some of the images' magnitude spectrum visualize in the same manner. We are going to use the same filter techniques which has the same magnitude spectrums.





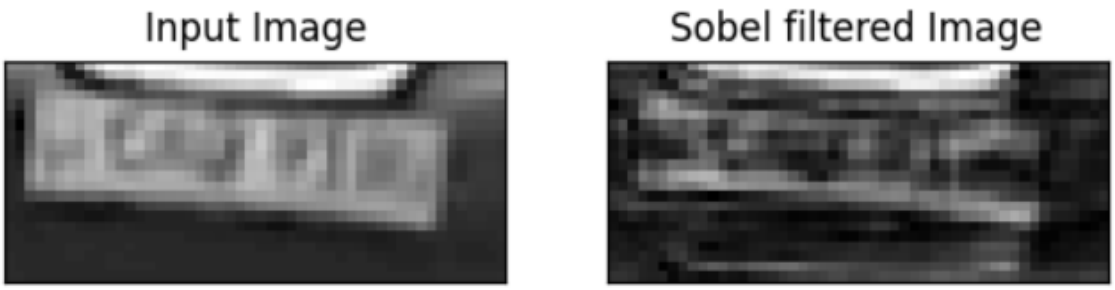


Results for high pass filters

Here we applied some filters to images and got the output image for some cases.

<u>Output for a gaussian high pass filter</u>

Output for a sobel edge detection filter



References

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