Character Recognition

Segmentation

For segmentation, we first use ISODATA thresholding to binarize the image of the plate. Afterwards, we eliminate the noise on the edges of the image and iterate the binary image column by column, in order to detect where each letter starts. Once we separate each letter, we run a check to make sure that it is for sure a letter instead of random noise or a dash, based on where the majority of its pixels are. Because of letters that may not be equally thick in all columns, like R or J, we are more flexible on the criteria that determine when a letter starts and stops.

Character Segmentation

Once the character is segmented from the plate, it is passed through the character recognition pipeline. For the purpose of predicting characters with high morphological variance which is mainly produced in the previous steps in the main pipeline, we are using a subset of the OCR-Dataset, with 100 instances for each character. This dataset contains a large number of characters with high enough variance for our needs. After preprocessing this data, the pipeline follows the steps,

- Resize the input segment, so that it is compatible with the reference data.
- Calculate the difference score using XOR for all reference images.
- Finally, categorize the input segment as the label of the reference image with the lowest difference score.

Labeled as 23-CSR-5

Evaluation

For evaluation, we test our system on a fraction of plates from Categories I, II. For each plate, we compare how many of the characters are correctly recognized. For Category I, we test the system on 96 characters (16 plates), for Category II we test on 72 characters (12 plates). To evaluate how well our recognition works, we calculate its accuracy score. Here are our results:

- Category I: 65%
- Category II: 75%