

Automatic Licence Number Plate Recognition System

Abstract:

This final project develops an algorithm for automatic number plate recognition (ANPR). ANPR has gained much interest during the last decade along with the improvement of digital cameras and the gain in computational capacity. The architecture which is built in five sections; the first is the initial detection of possible number plates using edge and intensity detection to extract information from the image. The second and the third step, thresholding and normalisation, are necessary to use the images in the following stages; the text of the plate is found and normalised. With the segmentation, each character of the plate is isolated for subsequent recognition. The last step reads the characters by correlation template matching, which is a simple but robust way of recognizing structured text with a small set of characters. It evaluates the system's speed and his error rate. The databases used consist of images under normal conditions and only Bulgarian's numbers plate.

Existing System:

The car plates appear in different types of character styles, either single or double row, different sizes, spacing and character counts. Due to such variations even localising or detecting these plates becomes a tedious process. In the existing system, foreground estimation is done by Gaussian mixture model then proposing a real time and robust method of licence plate extraction based on block variance technique. Licence plate extraction is an important stage in licence plate recognition for automated transport systems. The Extracted licence plates are segmented into individual characters by using a region-based approach. The recognition scheme combines adaptive iterative thresholding with a template matching algorithm.

Proposed System:

This project is on the development of new approaches for extraction of licence plates. The proposed algorithm is based on video acquisition, extraction of plate region, segmentation of plate characters and recognition of characters. Extraction of plates is a difficult task. In this project, a simple licence plate extraction method is presented. The method is basically based on the Edge Detection algorithm including four major stages, which are RGB to grey-scale conversion, Gaussian Blurring, morphological operations and extracting the accurate location of the licence plate. Mean squared error method is used for recognition of characters.

Software Tools:

1. TensorFlow
2. Keras
3. VS Code
4. OpenCV
5. Python3

Hardware Tools:

1. Laptop
2. Operating System: Windows
3. RAM: 16GB
4. ROM: 4GB
5. GPU
6. Fast Internet Connectivity