Vehicle Number Plate Recognition

and Validation

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Abstract **:** Due to globalization and the increase of automobiles, gated communities, corporate premises and university campuses witness a lot of unfamiliar vehicles with number plates in different formats, fonts, font sizes and sometimes even in various languages which enter and leave the state every day, and it is difficult to register the vehicle numbers manually even for a multi-lingual person. This document aims to extract image frames from a streaming CCTV footage, recognize the vehicle number into its corresponding text format and showing the details about the vehicle and owner. Template matching has been used earlier in recognition of digits and letters, this paper also uses the concept of template matching methodology in image processing which is developed to extract the vehicle number from the number plate. The alphanumeric values are extracted from the image containing the number plate, one after the other, and are matched with its corresponding template with the help of the template matching methodology. This template matching block compares each and every pixel value of the original image with the pixel values of the corresponding stored template and returns a template metrics value as an output. After getting the value it will validate with the database which will show the full details of the vehicle and owner.

Keywords—License plate extraction; License plate recognition;MATLAB; Image processing; Template matching; validation

1.INTRODUCTION

Vehicle number plate [1] recognition plays an important role in various applications such as highway traffic monitoring, automatic toll charges, access control of parking lots, identification of vehicles being plundered, etc. It was first employed in a police station in the United Kingdom in 1976. [2] Prototype systems were introduced in 1979 and commercial systems were awarded contracts this type of application.

A system is required to easily identify a vehicle in order to automate these processes and make them more efficient. How to identify a particular vehicle is the important question here? The obvious answer to this question is to use the number plate of the vehicle as each vehicle has a unique number which makes it easily [3]distinguishable from other vehicles.

Moreover, a system can be integrated with the speed camera, which could automatically identify and record the extracted vehicle number plate of the vehicles travelling beyond the speed limit into a database.

2.METHODOLOGY

As the vehicle approaches the entrance of the gate, a camera captures the image of the vehicle (plate number being the [4]predominant subject). This picture is loaded into the system to extract different regions of interest (license plate number) from the captured image. Once the image is loaded into the system, the first step that the program would be coded to do is to covert the color image into binary image as shown in Fig. 4. This allows the detection of number plates of all colors (yellow, red, white, blue etc.). After the reduction of noise from the grayscale picture, the image is converted into a binary image form. The system then proceeds to isolate the regions of interest (further remove noise elements) from the captured image using different combinations of [5]morphological operations.