

SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMKUR-572103
(An Autonomous Institute under Visveswaraya Technological University, Belgaum)



Project Report

on

“LICENSE PLATE RECOGNITION SYSTEM”

Sponsored by Karnataka State Council for Science and Technology
(Project Proposal Reference Number: 35S0297)

submitted in partial fulfillment of the requirement for the completion of VIII semester of

BACHELOR OF ENGINEERING in **ELECTRONICS AND COMMUNICATION**

submitted by

MANJUSHREE.R	1SI08EC063
MOHAMED ISMAYIL	1SI08EC064
ROOPADARSHINI C.K	1SI08EC091
JAYANTH ATHREYA.R	1SI08EC121

under the guidance of

Dr. R. SRIKANTASWAMY
Professor,
Department of E&C
SIT, Tumkur-3

DEPARTMENT OF ELECTRONICS AND COMMUNICATION
2011-12

ABSTRACT

License plate recognition uses image processing and character recognition approaches to identify vehicles by automatically reading their license plates. The project aims at developing an intelligent real time *License Plate Recognition System* applied to video frames which caters to the need for intelligent traffic management system, in order to cope up with constantly increasing traffic on today's roads. The system may also be used in various security applications such as parking, access and border control or tracking of stolen cars. The task is quite challenging due to the relative motion between the vehicle and the acquisition device, diversity of plate formats and the non-uniform outdoor illumination conditions during image/video acquisition. The objective is to optimize the approach to operate efficiently under such conditions.

License plate recognition (LPR) algorithms in images or videos are generally composed of four processing steps, namely, image/video acquisition, License plate detection and extraction, Character segmentation and Character recognition. In order to fast locate the license plate in a video, the selection of best frame algorithm is to be implemented which also ensures robustness of the method to illumination conditions. Once the image/video of a vehicle is captured, it is necessary to locate and extract the license plate region from a larger scene image. Second, having a license plate region to work with, the alphanumeric characters in the plate need to be extracted from the background so as to deliver them for recognition stage.

The license plate is extracted from the captured image/selected frame of a vehicle using fusion of spectral analysis and connected component analysis. Colour image processing has been employed to extract yellow license plates efficiently. The motion blur problem is dealt using Cepstral Analysis. The task of segmenting alphanumeric symbols from the license plate is accomplished using connected component analysis. The redundant spaces and non-character elements in the license plate are eliminated by using additional heuristics. For character recognition, feature extraction techniques like Principal Component Analysis (PCA), Linear Discriminant Analysis (LDA) and Support vector machine (SVM) are used. All the algorithms have been implemented in MATLAB 7.12.0 (R2011a).