

1.1Preface

It is believed that there are currently more than half a billion cars on the roads worldwide. All those vehicles have their vehicle identification number (VIN) as their primary identifier. The VIN is actually a license number which states a legal license to participate in the public traffic[1].

All vehicle world-wide should have its license number - written on a license plate - mounted onto its body (at least at the back side) and no vehicle without properly mounted, well visible and well readable license plate should run on the roads.

To process, sort or analyses data everyone thinks about using computers. If the data is already in the computer most of these tasks are rather easy to be carried out. It is needless to say that the license number is the most important identification data a computer system should treat when dealing with vehicles. Automatic License Plate Recognition (ALPR) replaces, redeems the task of manually typing the plate number of the bypassing vehicle into the computer system

Strictly speaking License Plate Recognition(LPR) System is an integrated hardware + software device that reads the vehicles license plate and outputs the license plate number in ASCII - to be understood and processed by the computer system [2].

LPR system has two objectives: First, it should find out the license plate location .And second, it should recognize the alphanumeric characters on the plate, by using Optical Character Recognition (OCR)[3].

1.1.1 Optical Character Recognition

OCR is the electronic conversion of images of typewritten or printed text into machine-encoded text. It is widely used as a form of data entry from printed paper data records, whether invoices, bank statement, receipts, business card, mail, or other documents. OCR lets you convert images with text into text documents using automated computer algorithms[4].

Also OCR can refer to the branch of computer science that involves reading text from paper and translating the images into a form that the computer can manipulate (for example, into ASCII codes). An OCR system enables you to take a book or a magazine article, feed it directly into an electronic computer file, and then edit the file using a word processor.

All OCR systems include an optical scanner for reading text, and sophisticated software for analyzing images. Most OCR systems use a combination of hardware (specialized circuit boards) and software to recognize characters, although some inexpensive systems do it entirely through software. Advanced OCR systems can read text in large variety of fonts, but they still have difficulty with handwritten text.

The potential of OCR systems is enormous because they enable users to harness the power of computers to access printed documents. OCR is already being used widely in the legal profession, where searches that once required hours or days can now be accomplished in a few seconds[5].

1.2 Problem statement

The effect of manually entering the Vehicle Identification Number (VIN) can cause a delay in the process of identifying the vehicle, also there is no archive for the tickets taken, besides it can be important in the cases where the need of the vehicle full information is critical.

1.3 Proposed solution

Automatic License Plate Recognition (ALPR) is a technology solution that takes photographs of license plates and converts these images to text using Optical Character Recognition (OCR) algorithms.

1.4 Aim and Objectives

1.4.1 Aim

The aim of this research is developing an ALPR system cable of recognizing line of sight (LOS) license plates.

1.4.2 Objectives

The detailed objectives of this research include:

- To develop an algorithm capable of recognizing LOS plates.
- To test the algorithm of different license plates from different countries.
- To create a database to compare the result of the algorithm.

1.5 Methodology

OCR Algorithms are capable to provide an alpha numeric conversion of the captured license plate images into a text entry. License plate recognition involves capturing photographic images of license plates, whereby they are processed by a series of the proposed system is designed to recognize the license plate from the rear rand of vehicle. In this algorithm we are using LOS captured pictures.

The implementation of the program is developed on MATLAB. The following are the steps used during implementation of the algorithm shown in the below flowchart.

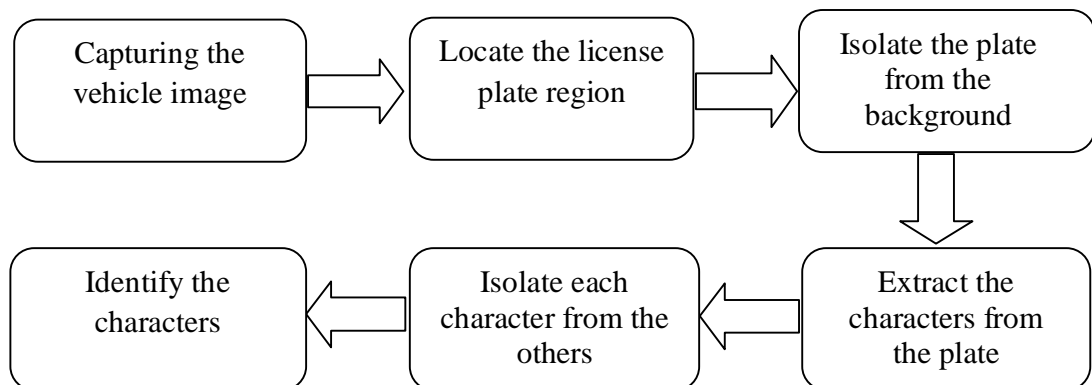


Figure 1-1:Flow Chart of the LPR Algorithm

1.6 Thesis Outlines

The thesis is divided into five chapters: Chapter One is an introduction facilitates briefly the purpose of this project.

Chapter Two is a literature review that gives a brief review of License Plates, Optical Characters Recognition and Automatic License Plate Recognition.

Chapter Three discusses our algorithm and how it can be deployed with a detailed explanation of the system. Chapter Four presents several result cases with a discussion of each one. Chapter Five provides the conclusion and recommendations.