

A ROBUST-EFFICIENT WAY OF APPROACH TO DETECT VEHICLE LICENSE PLATE USING IMAGE PROCESSING

¹K.V.K.SASIKANTH, ²M.YASWANTH BALARAMARAJU, ³P.SAI MEGHANA, ⁴S.GOWRI PRIYANKA, ⁵K.SAIRAM CHOWDARY

¹Assistant Professor, ^{2,3,4,5}UG Student, Department of Computer Science and Engineering, Godavari Institute of Engineering & Technology, Rajahmundry, AP

Abstract: License plate recognition (LPR) plays a significant role throughout this busy world, owing to the rise in vehicles day by day. Stealing of vehicles, breaking traffic rules, coming into restricted space also are increasing linearly, thus to dam this act registration code recognition is intended. Among the fundamental process steps such as detection of number plate, segmentation of characters and recognition of each character, segmentation plays an important art, since the accuracy of recognition is based on how perfect the segmentation is done. To avoid problems like unwanted illumination, tilt that degrades the segmentation which in turn affects the recognition accuracy numerous algorithms are developed for this work. This paper presents a strong technique for localization, segmentation and recognition of the characters within the located plate. Images from still cameras or videos are obtained and regenerated in to grayscale images. Hough lines are determined using Hough transform and therefore the segmentation of grey scale image generated by finding edges for smoothing image is employed to cut back the quantity of connected part and then connected part is calculated. Finally, single character within the registration code is detected. The aim is to indicate that the planned technique achieved high accuracy by optimizing numerous parameters that has higher recognition rate than the standard ways.

Key words: Image Processing, License Plate Recognition, Automatic License Plate Recognition

I. INTRODUCTION

License Plate Recognition (LPR) is an image processing technology used to identify vehicles by their number plates. In view of its potential application in traffic monitoring systems and highway toll collection, LPR systems have recently attracted considerable interest as part of an Intelligent Transport System. LPR is also known as “Automatic Number Plate Recognition (ANPR).” The first invention of the Automatic Number Plate Recognition (ANPR) was in 1976 at the Police Scientific Development Branch in the UK. Prototype systems were working by 1979 and contracts were let to produce industrial systems, first at EMI Electronics then at Computer Recognition Systems (CRS) in Wokingham, UK. There are different algorithms that have been used in the process of license plate recognition for different countries. The reason is that climatic conditions e.g. winter, type of plate, alphabet etc. for different countries vary. One algorithm could work very well for a given country’s plate but very poorly for another. In our paper we detected and extracted “INDIAN LICENSE PLATES” by taking frames from the videos taken by our personal devices like cell phones, hobby drones.

II. APPLICATIONS OF LPR

License Plate Recognition (LPR) is an image processing technology used to identify vehicles by their number plates. In view of its potential application in traffic monitoring systems and highway toll collection, LPR systems have recently attracted considerable interest as part of an Intelligent Transport System. LPR is also known as “Automatic Number Plate Recognition (ANPR).” The first invention of the Automatic Number Plate Recognition (ANPR) was in 1976 at the Police Scientific Development Branch in the UK. Prototype systems were working by 1979 and contracts were let to produce industrial systems, first at EMI Electronics then at Computer Recognition Systems (CRS) in Wokingham, UK. There are different algorithms that have been used in the process of license plate recognition for different countries. The reason is that climatic conditions e.g. winter, type of plate, alphabet etc. for different countries vary. One algorithm could work very well for a given country’s plate but very poorly for another. In our paper we detected and extracted “CALIFORNIA LICENSE PLATES” by taking frames from the videos taken by our personal devices like cell phones, hobby drones.

III. BASIC METHODOLOGY

On the software side, ANPR typically detect the location of the license plate in an image first, pre-process the plate image by orientation and sizing correction, and segment the useful information portion of the license plate, finally it uses optical character recognition (OCR) to read the plate. Additional processing to check characters and positions to classify license plate and link license plate information to some database are often needed depending on the applications.

IV. EXISTING SYSTEM

They proposed a novel scheme to automatically locate license plates by principal visual word (PVW), discovery and local feature matching. Observing that characters in different license plates are duplicates of each other, we bring in the idea of using the bag-of-words (BoW) model popularly applied in partial-duplicate image search.

Unlike the classic BoW model, for each plate character, we automatically discover the PVW characterized with geometric context. Given a new image, the license plates are extracted by matching local features with PVW. Most of the previous methods perform well only under certain predefined conditions. Some common restrictions include fixed illumination, license plates with little blur or distortion from viewpoint changes, relatively simple backgrounds and the presence of only a single license plate in an image.

More recent state-of-the-art approaches impose fewer restrictions on license plate detection at the cost of increased computational complexity. However, these approaches still have difficulty extracting license plates from complex scenes.

V. PROPOSED SYSTEM

In the proposed system we proposed an efficient and robust approach to license plate detection that is able to accurately localize one or multiple vehicle license plate(s) with diverse variations from complex backgrounds in real time. To speed up the detection algorithm overall, we first investigate how to reduce the size of the original high-resolution image without decreasing license plate detection performance. An efficient license plate verification method is proposed to accurately detect the true license plate from among the candidate regions using a cascaded license plate classifier (CLPC), which is trained based on color saliency features.

VII. LIMITATIONS OF PROPOSED SYSTEM

Our system will face some difficulty and takes more time to detect and extract the license plate of the vehicles which are captured in low light conditions. If the license plate quality is blurry, our proposed system is not able to detect accurately.

VIII. WORK FLOW FOR PROPOSED SYSTEM

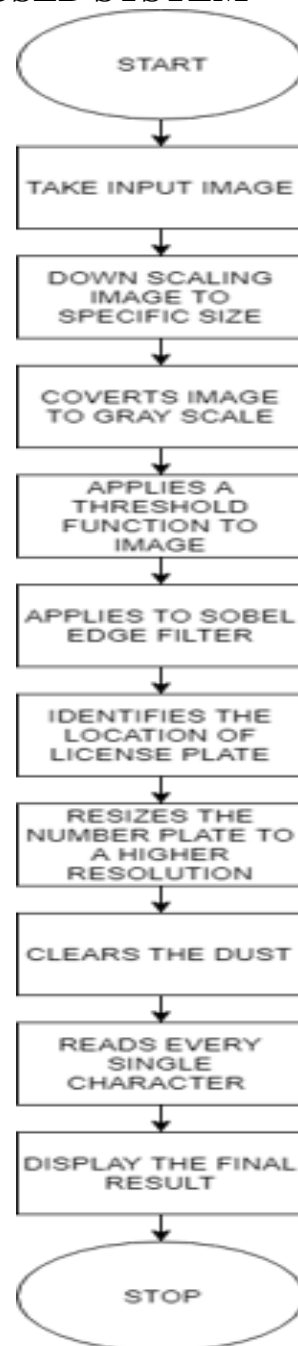


Fig:8.1 Flow chart of working of the Proposed System.

IX. CONCLUSIONS AND FUTURE SCOPE

In summary, this paper is about detection and extraction of license plate of a vehicle in a faster way with detection of rusty plates as well. The average detection and extraction of a good & clean quality license plate is around 90-99% accurate and for the dirty plate is around 77-85% accurate and for rusty plates is around 75-89% accurate.

We will add a feature of detecting and extracting license plates directly from videos. Improving the detection rate by enhancing the algorithm we have proposed. Improving the license plate quality, for different weather conditions even the license plate was taken in low light conditions.

REFERENCES

- [1]. K. Gaurav and Bhatia P. K., “Analytical Review of Preprocessing Techniques for Offline Handwritten Character Recognition”, 2 nd International Conference on Emerging Trends in Engineering & Management, ICETEM, 2014.
- [2]. Renata F. P. Neves, Alberto N. G. Lopes Filho, Carlos A.B. Mello, CleberZanchettin, “A SVM Based Off-Line Handwritten Digit Recognizer”, International conference on Systems, Man and Cybernetics, IEEE Xplore, pp. 510-515, 9-12 Oct 2011, Brazil.
- [3]. A. Brakensiek, J. Rottland, A. Kosmala and J. Rigoll, “Offline Handwriting Recognition using various Hybrid Modeling Techniques & Character N-Grams”, Available at <http://irs.ub.rug.nl/dbi/4357a84695495>
- [4]. Salvador España-Boquera, Maria J. C. B., Jorge G. M. and Francisco Z.M., “Improving Offline Handwritten Text Recognition with HybridHMM/ANN Models”, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 33, No. 4, April 2011.
- [5]. U. Pal, T. Wakabayashi and F. Kimura, “Handwritten numeral recognition of six popular scripts,” Ninth International conference on Document Analysis and Recognition ICDAR 07, Vol.2, pp.749-753, 2007.

ACKNOWLEDGEMENT

We have great pleasure in expressing our gratitude to Sri K.V.V.Satyanarayana Raju, Founder & Chairman, Chaitanya Group of Institutions, Sri K. Sasi Kiran Varma, Vice Chairman, GIET Group of Institutions, Smt. Lakshmi Raju Executive Director, GIET, for their kind support in providing us an opportunity to do research in this college.

