Automatic Vehicle Recognition Using Image Processing

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Abstract- *The truck is recognized by number plate through image processing. And we detect the weight of the truck before and after the truck have been loaded. With the help of the weight and material, it can calculate and estimate the amount for that material. And the paper permitted by the government is issued to the truck driver. The recognized number plate number has been checked in the database, whether the number is in the rental customer list, if so an additional token is provided. Else the customer should pay the estimated amount and they can leave. In the Existing system, all the above works are done manually. In the Proposed system, we automate all the tasks. In addition we process the image of the truck entering the creaser.*

Keywords- Image processing,Manual work, Token, Number Plate.

I. INTRODUCTION

Vehicle Number Plate Identification (VNPI) is a part of digital image processing which is generally used in vehicle transportation system to categorize the vehicle. Number plate recognition systems are having varieties of application such as traffic maintenances, tracing stolen cars, automatic electronic Toll collection system etc. But the main aim is to control the traffic management system. In India the traffic management system is developing day by day. In India, the number plate containing white background with black foreground color is used for private cars and for the commercial vehicles yellow is used as background and black as foreground color. The number plate starts with two digit letter "state code" followed by two digit numeral , followed by single letter after those four following digits 1 indicates the Country code, 2 indicates the state code, and 3 indicates the district code, 4 indicates the type of vehicle and 5 indicates the actual registration number.

Locating the number plate is very stimulating work in the field of image processing. The whole system mainly consists of two stages. First to identify the position of the number plate from the particular vehicle and second segmentation of all the numbers and letters of the number plate.

The identification task is interesting because of the nature of the light. The position error will increase if the color of the number plate is related to the background. Noise on the number plate can sometimes cause error and low accuracy. There are some limitations that lead to failure in most practical applications due to the diversity of the number plate characteristics and the intricacy of the natural environment like rain, snow, for etc. we anticipated a method mainly based on edge detection and morphological operation and decrease the noise using mid-filtering noise removal method.

II. TECHNICAL SPECIFICATIONS

Python is a remarkably powerful dynamic, object-oriented programming language that is used in a wide variety of application domains. It offers strong support for integration with other languages and tools, and comes with extensive standard libraries.

OpenCV is a library of programming functions for real time computer vision originally developed by Intel and now supported by Willogarage. It is free for use under the open source BSD license. The library has more than five hundred optimized algorithms. It is used around the world, with forty thousand people in the user group.

Anaconda is a free and open-source distribution of the Python and R programming languages for scientific computing, that aims to simplify package management and deployment. The distribution includes data-science packages suitable for Windows, Linux, and macOS.

The Raspberry Pi is the center of the system, and it will be connected to a router which is internet enabled on its platform. The web interface is hosted by the web server and it will communicate with the Android Application in order to control of devices.

The Binarization Method converts the grey scale image (0 up to 256 gray levels) in to black and white image (0 or 1). The result of OCR highly depends upon the binarization. The high quality binarized image can give more accuracy in character recognition as compared original image because

noise is present in the original image. In fact problem is that which binarization algorithm is appropriate for all images.

III. HARDWARE REQUIREMENTS

INVOICE					
ARAM CEY(அரம் செய்) Transporters & Building materials supply		Invoice no: 025	Date : 22.08.2020 (Saturday)		
GST NO: 33FULPS8826J1ZU PH: 8825845950,9865041142 Email: suthakar8001@gmail.com 4/39,lakshmi nagar, Kinathukadavu,cbe- 642 109.		Dc no: -nil-	Date : -nil-		
To Mr. suriya somasundaram, Thekani,Coimbatore.		Reference: (self)	Note: Direct to customer		
GST NO:- -nil-					
S.NO	DESCRIPTION OF GOODS	Rate/unit	QUANTITY	PRICE	
1.	¾ jally	1500	4unit	6000/-	
		SGST	5%	300/-	
		CGST	5%	300/-	
			TOTAL	6600/-	
Amount in words: six thousand six hundred rupees only.					
Declaration : received all goods in good condition		Customer sign		for	

Through the image taken by the cameras the material is identified. And cost of the material is fetched out from the database which is already we stored.

According to the quantity of the material the total cost is calculated and tax amount is added with the total cost. Customer and vehicle details are fetched by scanning the registration number of the vehicle if it is regular.

And if the Customer is new and the details like name, address, & GST number are enquired and added with the cash receipt. And the E-way bill is generated towards the customers GST number.

And for the regular customer token is raised instead of cash receipt in the case they purchase for credit.

The token contains following details customer identity number, customer name, material purchased, quantity of the material, cost of the material and credit balance in the account.

IV. DEMONSTRATION

1. **Foundation**: permanent installations use a concrete foundation.
2. **Weighbridge,** also known as the scale deck: this is the structure that creates the driving surface for the trucks. The weighbridge is typically composed of modular sections that are placed together to span the desired length.
3. **Load cells**: these are the sensors that measure the weight on the scale. In most modern scales the weighbridge is supported by the load cells themselves.
4. **Terminal:** sometimes referred to as an indicator, the terminal is the control panel for the scale. It displays the weight value to the operator, and often serves as the connection point for other scale peripherals.
5. **Cables:** the signal from the load cells must be transmitted to the terminal. In most cases this is done with cable.

V. TIMELINE

The timeline of the project depends on the level of implementation from smaller scale to bigger scale. Once the project is about to be completed, it must be tested before final approval. Taking all these in account, we will work on it for 4 hours per week which comes to 18 hours per month it can take from 3 months to 6 months from the day it had been started for completion that means it will take a minimum of 45 hours and a maximum of 70 hours.

VI. CONCLUSION

An efficient less time consuming vehicle number plate detection method is projected which performed on multifaceted image. By using, Sobel edge detection method here detects edges and fills the holes less than 8 pixels only. To removing the license plate we remove connected components less than 1000 pixels.

The picture of vehicle number plate is taken with the image capturing system and the license number of the vehicle is perceived with the goal that the data and information of the vehicle owner can be obtained. In our paper, we have performed a technique in which the picture of the vehicle plate is taken. At that point, the noise diminishment is performed on it to show signs of enhancement come about. After this, segmentation and identification of characters are done using the template matching technique. In any case, the system can be utilized just for binary pictures and not for RGB pictures.

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