Implementation of Smart Tyre Killer

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***Abstract*—: Vehicle tracing system is an effective method to trace vehicle and to impede the movement of wheeled vehicles that are indulged in crime or traffic violations and other security related issues. In the proposed project we address this issue by combining the concept of tyre killer and vehicle tracing wherein we feed the suspect vehicle information which will be sent to the tyre killer and activated as per the users requirements and will be able to catch hold of the culprits as quick as possible. Vehicle tracing system is a mass surveillance method that uses edge detection method to read the license plates on vehicles. Tyre killer is designed to restrict and stop forceful entries of vehicles at defense installations and other security sensitive sites. Tyre killer is capable of receiving input signal from relay which in turn is connected to microcontroller. Thus, spikes will automatically operate according to the information received by the microcontroller. It carries an significant role in different applications for example traffic monitoring on highway, identification of plundered vehicles, check post etc. Automated vehicle tracing system can be used for different purposes depending on our requirements.**

Keywords—: Tyre killer, vehicle tracing

INTRODUCTION

These days however with technology growing at a fast pace crimes are also increasing tremendously. It is almost instinct to catch suspects. Automated vehicle tracing system is being used in variety of ways to track and display vehicle locations in real-time.Inspite of this we also have a tyre killer to catch hold of the suspects. But all this did not prove to be satisfying the current crime chasing scenario. The registration number is a numeric or an alphanumeric code that uniquely identifies the vehicle within the issuing regions database. Vehicle tracing system is a mass surveillance method that uses edge detection method to read the license plates on vehicles. Tyre killer is designed to restrict and stop forceful entries of vehicles at defense installations and other security sensitive sites. Tyre killer is capable of receiving input signal from relay which inturn is connected to microcontroller. Thus,spikes willautomatically operate according to the information received by the microcontroller. It carries a significant role in different applications for example traffic monitoring on highway, identification of plundered vehicles, check post etc. These days however with technology growing at a fast pace crimes are also increasing tremendously. It is almost instinct to catch suspects. Automated vehicle tracing system can be used for different purposes depending on our requirements.

II. LITERATURESSURVEY

The number plate of the vehicle is identified by image identification technique and number plate of the vehicle automatically detected [1]. This system can be implemented for the security checking in the area of the parliament and defense military area and also used in the toll plaza, parking .The images of the vehicle will be captured by cameras and will processed by MATLAB. Here MATLAB is used for the image identification and vehicle number extraction. The LCD screen is provided at the entry of gate to give the instruction to the driver that whether he is permitted to this area or not and the message will be passed to security cabin. The communication between MATLAB is done by using ZigBee. This process gives the very accurate and efficient record of all the motor vehicles. This automated system is easy to use.

Super resolution is a technique which is used to enhance the visual quality of a sequence of low resolution image by high resolution image[2]. Applying Optical Character Recognition Technique it acquires the text from the super resolution image of vehicle number plate by means it compares with the RTO database and then it displays the details of the vehicle such as owners name, vehicle registration etc.
The contribution of the proposed system
1.Selection of vehicle number plate.
2.Super resolution of number plate.
3.Display of vehicle details.
Overall the complexity is less, it gives faster access, automation for vehicle detection and easy retrieval of image to data using OCR.

A ECNPR system that is capable of recognizing different design and font styles of car number plates[3], Firstly they use multiple templates matching for recognition of characters. Secondly ,removal of noise by dynamically adjusting the pixel value. Lastly, they create and make use of a more challenging dataset which is compromised if different font style and design of number plates.
The overall ENCPR system is composed of two things
1.Finding the location of car number plate.
2.Identification of correct characters on plate.
The errors in finding the exact position of plate will rise if the color of the car number plate is much related to the background color. Too much noise on the image of number plate could also cause low accuracy and faults. The future efforts of this concept are focused to improve ECNPR system performance by involving other parameters like intensity of light especially during night.

A. Abbreviations and Acronyms

OCR	Optical Character Recognition
ECNPR	Enhanced Car Number Plate Recognition
LCD	Liquid Crystal Display

RTO	Regional Transport Office
ANPR	Automatic Number Plate Recognition
NBID	Non Blind Image De-blurring
LPR	License Plate Recognition
MSLPR	Multi Style License Plate Recognition
ANN	Artificial Neural Network

III. METHODOLOGY

In the proposed model we continue the concept of tyre killer and vehicle tracing and make effective use of it. Here the information of suspect vehicle is fed to the system and compared with the real time moving vehicle and accordingly tyre killer will be activated.

A. Data Feeding

The number plate of the vehicle to be traced will be fed manually. The data fed will be in the form of alphanumeric characters. i.e. Every character(A-Z) and numerical values (0-9). Here the baud rate is set to 9600 b/s. The data bit that can be transmitted is 8 bits. Parity is none and Stop bit is 1bit.Flow Control is none.

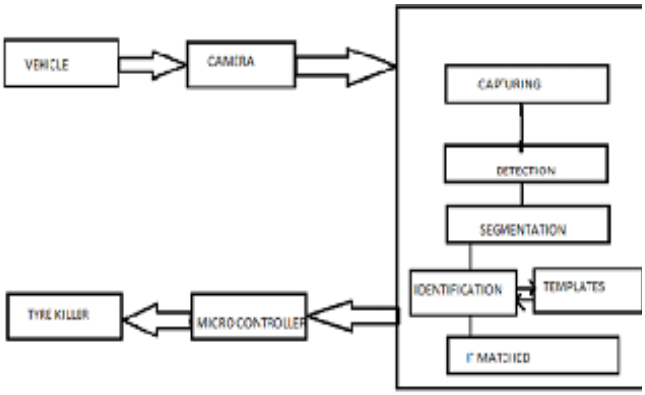

Figure 1:Methodology of vehicle tracing system

B. Data Processing

This refers to comparing the real time image captured by the camera or by browsing image offline with the data fed manually by using MATLAB tools. The command window used in MATLAB captures the moving vehicle image which is set to the resolution of 640X480. Here the number plate extraction is carried out using edge detection technique.

The image will be in the form of RGB and is previewed. The image captured will be resized to 680XNaN and each character is displayed. Later RGB color image is converted to the gray code. The gray threshold of image, pixel greater than 20 will be removed and location of number will be identified and the number plate is resized to 240XNaN. The object width with too long or smaller than 200 will be removed. Then the string comparison takes place.

C. Data Transmission

If the extracted data and the data which is fed manually is matched up tothedesired level then, the serial port will transmit high pulse to the microcontroller PIC16F877A.

D. Relay Module

If microcontroller PIC16F877A receives high pulse the receiveddata will be read and it will be sent via UART and “vehicle detected” will be displayed in the LCD and the connectivity will be established between the two pins of the relay i.e. relay will be ON. If received pulse is low then the LCD will be cleared.

E. Tyre Killer

When relay will be activated it will in turn operate the tyre killer i.e. the road spikes will move in the upward direction and similarly when it deactivates the spikes will return to its original position.

IV. RESULT

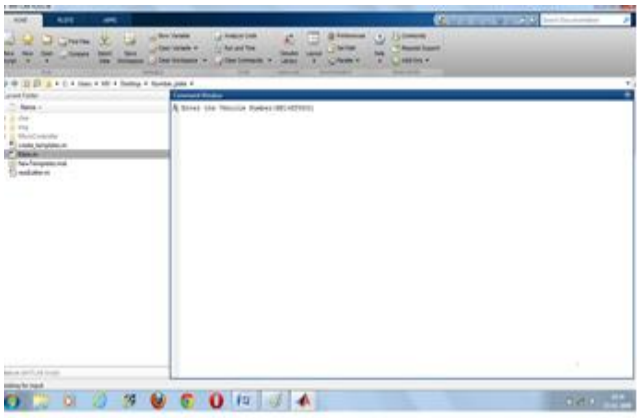

Figure 2: Enter the input to the system

Figure 3: Image captured by the camera

Figure 4: Character recognition

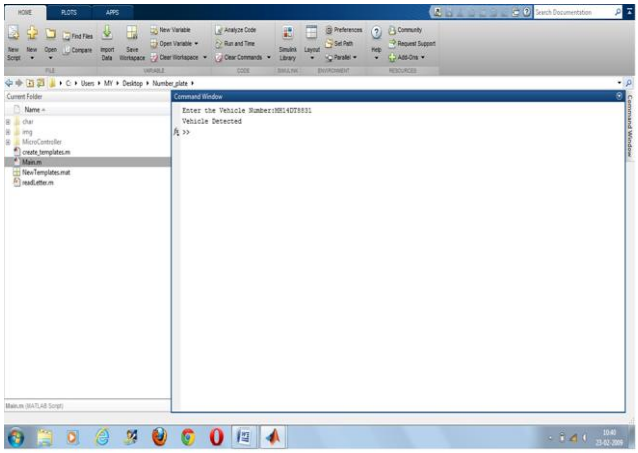

Figure 5: Output

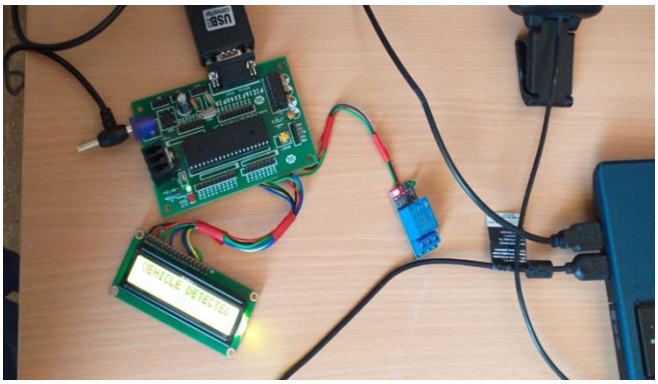

Figure 6: Output displayed on LCD

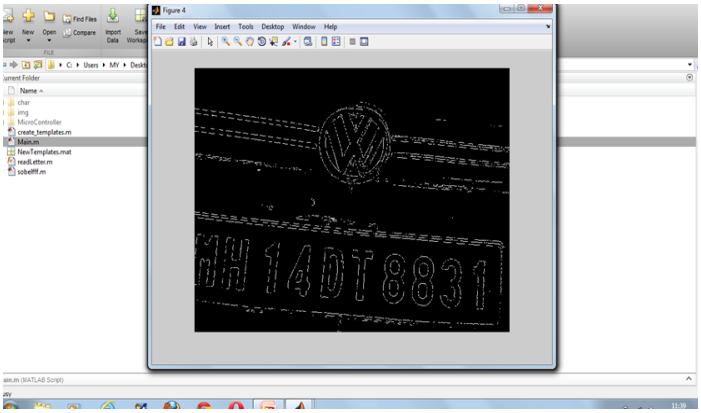

Figure 8:output of sobel

V. FUTURE WORK AND CONCLUSION:

The automatic vehicle identification system plays an important role in detecting security threat.The system use series of image processing techniques for identifying the vehicle from the database stored in the PC. The system is implemented in MATLAB and it performance is tested on real images.The system robustness and speed can be increased if high resolution camera is used.Accuracy can be increased by adding features such as color,model of the vehicle, face recognition of driver while comparing.

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