Denial the Entry for Non-Registered Vehicle

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Abstract— ANPR (Automatic Number Plate Recognition) technique can be use for identification or recognition of vehicle by its number plate and notifying by alarm to the security when non-registered vehicle entered into specific area or restricted area[registered vehicle-the category of vehicle in which the vehicle number like MH 01 DS 123,DL 03 RD 234,KA 04 GH 543 etc already stored into database while non registered vehicle- the category of vehicle in which the vehicle number not yet stored] . As well as The ANPR module is playing a vital role in different applications such as traffic monitoring, detection of stolen vehicles, automatic payments of tolls and parking etc. Automatic Number plate recognition (ANPR) has been employed in many security applications by government of different countries.
Key words: ANPR, OCR, CCTV

I. INTRODUCTION

Security is big issue, in highly restricted area as well as in public places. Vehicle identification is an essential area in the development of traffic and surveillance. Nowadays in every organization (company, hospital, college, malls etc) vehicle surveillance has become important issue. Presented paper will help to deny the entry for non-regular or Unauthorized vehicle. So we need to develop such techniques by which organization can resolve their security issues automatically.

II. OVERVIEW

ANPR (Automatic Number Plate Recognition) technique can be use for identification or recognition of vehicle by its number plate and notifying by alarm to the security when non-registered vehicle entered into specific area or restricted area. Automatic Number Plate Recognition or ANPR is a technology that uses pattern recognition to 'read' vehicle number plates.

In simple terms ANPR (Automatic Number Plate Recognition) cameras 'photograph' the number plates of the vehicles that pass them. This 'photograph' is then fed in a computer system to find out details about the vehicle itself like number plate

This system used by local authorities and commercial organizations in all aspects of security, surveillance, access control and traffic management.

This project discusses a method for the vehicle number plate recognition from the image using a special form of Optical Character Recognition (OCR). ANPR(Automatic Number Plate Recognition) systems use optical character recognition to read number plates through CCTV systems, which enables vehicle registration numbers to be stored, analyzed and retrieved, These systems can be fully automated to operate 24/7 and monitor unauthorized parking and vehicle movements in environments such as Access control points, Distribution centers, Hospitals and car parking areas.

As soon as Non-Registered vehicle enters into the restricted area, the alarm would blow as ANPR take the pictures of number plate of vehicle by cctv and compare with database and off course there will no data stored for such vehicles.

We can store data of any vehicle or any vehicle can become registered vehicle provided that vehicle must not be having criminal intension.

III. TECHNOLOGY

ANPR (Automatic Number Plate Recognition) consists of cameras linked to a computer. As a vehicle passes, ANPR 'reads' Vehicle Registration Marks – more commonly known as number plates - from digital images, captured through Closed Circuit Television (CCTV). The digital image is converted into data, which is processed through the ANPR system.

Nowadays, the ANPR (Automatic Number Plate Recognition) technology has improved its reliability; some systems are able to offer recognition rates between 65 and 75%. Also, some ANPR equipments are able to recognize the number plate of vehicles that drive up to 120km/h.

Taking picture of number plates of vehicle and storing as database as well as checking for authentication these processes takes around 3-5 seconds.

Generally, the ANPR technology can be bought in two modalities:
− The ANPR engine
− The ANPR equipment (Hardware + recognition engine)

The ANPR engine can recognize the number plate directly from the images stored in a hard disk. Software of this type allows for taking efficient use of images that have been received from other systems like CCTV or cameras.

IV. WORKING

Number plates are used to identify the vehicle, when vehicle enters, the number plate is recognized and stored in database as an in time. When vehicle later exits the place through the same gate number plate is recognized again and stored details with the first one in the database as an out time

While the vehicle approaches the gate ,the ANPR(Automatic Number Plate Recognition) unit automatically reads the license plate number compare the pre-defied list and if number plate is not belongs to pre-defied list then alarm tone would blow.

As well as if any vehicle coming for the first time into campus or restricted area and as we don't have that new entry in our database then automatically alarm would blow.

V. COMPONENTS OF ANPR

The major components of these systems are cameras, software, computer, frame grabbers, and triggers.

- Camera: takes image of number plate (front and rear side)
- Illumination: a controlled light, that can bright up the plate, and allow day and night operation, in most cases illumination is Infra-Red(IR) which is invisible to driver.
- Frame grabber- an interface board between the camera and the PC, allows the software to read the image information. A frame grabber is a hardware device used to convert a video frame to a single, still bitmapped image
- Computer: normally a PC running windows. It runs the ANPR application which controls the system, reads the image analyzes and identify the plate, and interface with other application and systems.
- OCR (optical character recognition) - In OCR processing, the scanned-in image or bitmap is analyzed for light and dark areas in order to identify each alphabetic letter or numeric digit. When a character is recognized, it is converted into an ASCII code

VI. THERE ARE THREE CASES FOR SURVEILLANCE

A. Case: 1

1) When vehicle enters into the campus:
When vehicle enters into the campus, at the campus gate, camera captures the front number plate of the vehicle. And In-Time would be recorded.
And few steps would take place, those steps are given below:
a)   Basic flow (Case 1):
1) Capture the image(Front Number plate).
2) Load the Image.
3) Pre-processing of the image.
4) License plate detection.
5) Recognition of character.
6) Number identified.
7) Compared with database stored.
8) Message displayed (registered vehicle).
9) In-Time.

B. Case: 2

1) When vehicle Leave the Campus:
When vehicle leave the campus, at the campus gate, camera captures the rare number plate of the vehicle. And Out-Time would be recorded.
And few steps would takes place, those steps given below:
a)   Basic flow (Case 2):
1) Capture the image (Rare number plate).
2) Load the Image.
3) Pre-processing of the image.
4) License plate detection.
5) Recognition of character.
6) Number identified.
7) Compared with database stored.
8) Message displayed (task completed).
9) Out-Time
2) Case:3
3) When vehicle enters into the campus for the First time:
When vehicle enters into the campus, at the campus gate, camera captures the front number plate of the vehicle. And In-Time would be recorded.

And few steps would takes place, those steps are given below:
a)   Basic flow (case 3):
1) Capture the image.
2) Load Image.
3) Pre-processing of the image.
4) License plate detection.
5) Recognition of character.
6) Number NOT identified.
7) Alarm would blow.

VII. CONCLUSION AND FEATURE WORK

The aim of this project was to resolve the security issues regarding entry- exit of vehicles form gate of restricted area Like security members want to deny the entry of non-registered or non-regular vehicles automatically into the campus restricted area,

      The system works quite well however, there is still room for improvement. The camera used in the system for this project is sensitive to vibration and fast changing targets due to the long shutter time. The system speed can be increase with high resolution camera. The OCR method is sensitive to misalignment and to different sizes, so the affine transformation can be used to improve the OCR recognition from different size and angles. The statistical analysis can also be used to define the probability of detection and recognition of the vehicle number plate. At present there are certain limits on parameters like speed of the vehicle, script on the vehicle number plate, skew in the image which can be removed by enhancing the algorithms further.

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