**NUMBER PLATE DETECTION USING IMAGE PROCESSING**

**ABSTRACT**

With the increasing of the vehicles around the world, the possibility of being an accident in traffic increases dramatically. The countries all over the world take precautions to prevent the accidents. Many automatic auditing systems are developed for precaution. The faulty drivers that endangers the traffic safety are identified and punished. To identify the faulty drivers, the images taken from the traffic surveillance cameras are used. This paper presents algorithms for vision-based detection and classification of vehicles in video sequences of traffic scenes recorded by a stationary camera. Vehicles are modeled as rectangular patches with certain dynamic behavior. The proposed method is based on the establishment of correspondences between regions and vehicles, as the vehicles move through the image sequence. Experimental results from highway scenes are provided which demonstrate the effectiveness of the method. We also briefly describe an interactive camera calibration tool that we have developed for recovering the camera parameters using features in the image selected by the user. The proposed classification method is based on the tensor flow of the detected moving object obtained by background subtraction. Different from other shape based classification techniques, we exploit the information available in multiple frames of the video. This approach eliminates most of the wrong decisions which are caused by a poorly extracted silhouette from a single video frame. The decision boundaries in the feature space are determined using a training set, whereas the performance of the proposed classification is measured with a test set. To ensure randomization, the procedure is repeated with the whole dataset split differently into training and testing samples.

**INTRODUCTION**

Application of computer vision paves the way for vehicle detection and identification from a digital forensic video since it allows the identification of individual vehicles and extracts the parameters related to each vehicle such as location, registration number, colour, type simultaneously. In general, the information that can be extracted through this system can be used effectively to find the suspect vehicle in a high traffic flow and also recognize the number plate of the vehicle.

Due to recent progress in object detection, tracking and detection has become the leading paradigm in multiple object tracking. Within this paradigm, object trajectories are usually found in a global optimization problem that processes entire video batches at once. There is interest in vehicle tracking and identification due to its applications for identifying the suspect vehicle and for public safety. There is interest in vehicle tracking due to its applications for public safety and traffic monitoring. Vehicle tracking can be used by law enforcement to track criminals in cases of Amber Alerts and also suspect involved in other criminal activity.

The number of on-road motor vehicles has increased with the rapid growth of world’s economy and with this augmentation the need for security and monitoring of vehicles has also increased. Many successful commercial systems that employ dedicated camera systems, providing video input captured under control environments to ANPR algorithms. However, application scenarios in video surveillance and forensics such as tracking down a stolen vehicle or searching for a vehicle involved in a crime, as identified by a bystander to be of a particular registration number, requires the painstaking task of manual search, because the existing ANPR systems are not capable of efficiently working on video footage obtained via non-dedicated (for ANPR) CCTV systems.

This main objective of this project is to provide efficient and robust framework that can perform tracking, identification and recognition of multiple vehicle and their license plates in a real-time scenario (i.e., incoming video stream from cctv surveillance cameras). Also, this technology is used in suspecting criminals, obtaining information about the criminal vehicles from a captured forensic video.

**LITERATURE SURVEY**

* **“Performance assessment of model based tracking,” in Proc. IEEE Workshop Applications of Computer Vision**

Non-intrusive video vehicle detection and tracking for traffic flow surveillance and statistics is the primary alternative to conventional inductive loop detectors. Vision-based systems for traffic have an impressive spread both for their practical application and interest as research issue. This paper presents vision-based vehicle detection and tracking system which consists of environment background segmentation and subtraction, foreground moving object extraction, moving vehicles detection algorithms, object tracking algorithms, and vehicle classification. The proposed system can perform well for the video sequences acquired under different weather, illumination, and traffic conditions through the use of these technologies.

* **“A real-time computer vision system for measuring traffic parameters,” in Proc. IEEE Conf. Computer Vision and Pattern Recognition**

This paper presents algorithms for vision-based detection and classification of vehicles in monocular image sequences of traffic scenes recorded by a stationary camera. Processing is done at three levels: raw images, region level and vehicle level. Vehicles are modeled as rectangular patches with certain dynamic behavior. The proposed method is based on the establishment of correspondences between regions and vehicles, as the vehicles move through the image sequence. Experimental results from highway scenes are provided which demonstrate the effectiveness of the method. We also briefly describe an interactive camera calibration tool that we have developed for recovering the camera parameters using features in the image selected by the user.

**SYSTEM REQUIREMENT SPECIFICATION**

**H/W System Configuration:-**

# Processor - Dual Core

# Speed - 1.1 G Hz

# RAM - 4 GB (min)

# Hard Disk - 20 GB

# Key Board - Standard Windows Keyboard

# Mouse - Two or Three Button Mouse

Monitor - SVGA

# S/W System Configuration:-

# Operating System : Windows xp,7,8

# Technology : Python

Front End : Tkinter

IDLE : Python 2.7 or higher

Database : MySQL

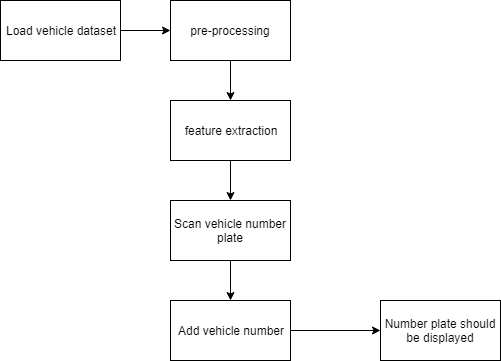
**EXISTING SYSTEM**

Tracking moving vehicles in video streams has been an active area of research in computer vision. In, a real time system for measuring traffic parameters is described. It uses a feature-based method along with occlusion reasoning for tracking vehicles in congested traffic scenes. In order to handle occlusions, instead of tracking entire vehicles, vehicle subfeatures are tracked. This approach however is very computationally expensive. In a moving object recognition method is described that uses an adaptive background subtraction technique to separate vehicles from the background.

**PROPOSE SYSTEM**

For this, we apply each and every feature on all the training images. For each feature, it finds the best threshold which will classify the Vehicle to positive and negative. But obviously, there will be errors or misclassifications. We select the features with minimum error rate, which means they are the features that best classifies the vehicle and background images. (The process is not as simple as this. Each image is given an equal weight in the beginning. After each classification, weights of misclassified images are increased. Then again same process is done. New error rates are calculated. Also new weights. The process is continued until required accuracy or error rate is achieved or required number of features are found).

**BLACK DIAGRAM**

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**CONCLUSION AND FUTURE WORKS**

An efficient less time consuming vehicle number plate detection method is projected which performed on multifaceted image. By using, 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. Our anticipated algorithm is mainly based on Indian automobile number plate system. Extraction of number plate accuracy may be increased for low ambient light image.

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