



VEHICLE SPEED ESTIMATION AND DETECTION USING OPEN CV

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Abstract: Traffic congestion not only. Affecting the human being, but also elevates the pollution .The most important causes that increase traffic congestion are lack of planning of city road, using vehicle widely .Traffic monitoring has only the manual algorithm that is the man power. In manual use we can only able to analysis the vehicles in one particular direction, so the accident or vehicles that passing through the another road or side can't be captured .Vehicle speed estimation used to calculate the speed in each image frame by using the vehicle position in each image frame .In this process it is possible to widely apply deep learning method to the analysis of traffic surveillance video. Traffic flow prediction ,anomaly detection, vehicles re-identification and vehicle tracking are basic components in traffic analysis. Among the application traffic flow prediction or vehicle speed estimation is one of the most important research topics of recent years .This project proposed the convolution neural network algorithm and hard clustering method will used to calculate the speed estimation. By using this process it will collect the details of the vehicles types, speed of the vehicle and vehicle detection.

Keywords: Machine Learning, Traffic monitoring, Anomaly detection

I. INTRODUCTION

All public managements throughout the world are worryingly involved in the reorganization of trustworthy solutions for traffic control. Their main objective is the development of speed violation encounter system, that provides traffic flow control. As traffic intensity is more, it is necessary to improve the traffic control and its management system.

Heavy automobile usage has been increasing the traffic and thus resulting in upsurge of road accidents. System designed for vehicle tracking and speed detection plays dynamic role in limiting the speed. Such systems are helpful in providing significant information regarding traffic control. Most of the road accidents happened due to over speed hence, many researches are going to detect speed of vehicles.

The image-processing field is widely used for traffic management system. It has much application like classification of vehicle, number plate detection, automated toll system; vehicle counting, tracking and mainly speed measurement.

Automatic tracking of vehicle can be the basis for many interesting applications. Moreover, there is a prerequisite to create an intelligent traffic surveillance system with real-time moving vehicle detection, speed estimation. In this technology, we are comparing the adjacent frames, which are giving us background modeling. After background modeling, foreground detection and then vehicle tracking achieved. Vehicle tracking gives distance Covered by that vehicle and done by centroid tracking method.

OBJECTIVE

The primary purpose of machine learning is to discover and also help people managing image file automatically rather than the manual method. In addition, to achieve accuracy in order to avoid incorrect accuracy and detection.

SCOPE

By using this Haarcascade CNN algorithm output will be executed faster than clustering algorithm. Prediction and accuracy will be high in this process.

1 SYSTEM ANALYSIS

Problem definition

The primary purpose of machine learning is to discover and also help people managing image file automatically rather than the manual method. In addition, to achieve accuracy in order to avoid incorrect accuracy and detection.

**EXISTING SYSTEM**

Efficient functionality, Low accuracy, since they using clustering algorithm the methods have no requirement of tire models and the underlying kinematic models are also straight forward and easy to understand.

PROPOSED SYSTEM

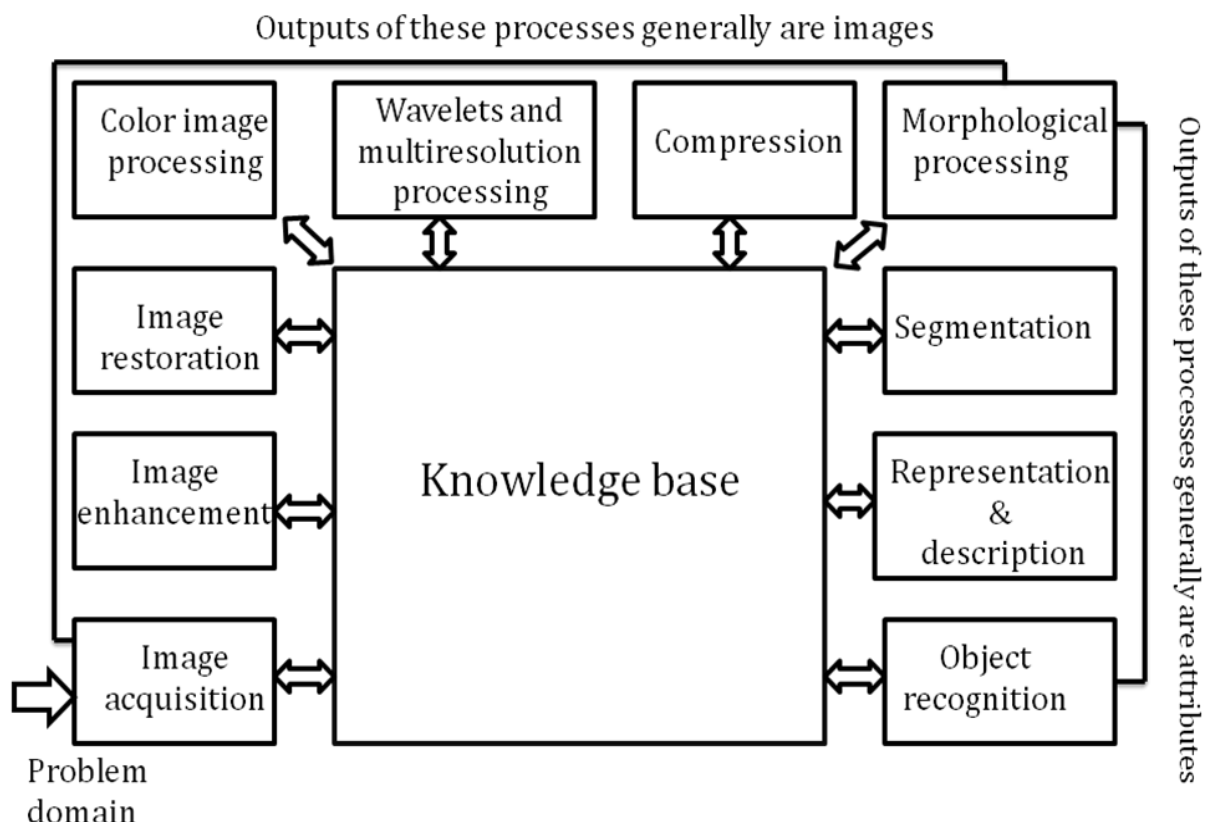
The given input video is at first pre processed according to the requirements. From the processed video sample, the vehicle is detected using the filters. This vehicle is then tracked and analyzed in order to find its speed. A Video Capture object is created for getting a live stream video. Its debate can be either the contraption report or the name of a video record. The video will be canny and in the event that it is incredibly high, video will be moderate. The number of subcomponents that apply various corrections or enhancement features to an input image. When one or more of the pre processing options are enabled, the subcomponents operate the corrected image. After every pixel is gathered by this model framework, portions of the frontal area focuses are shown by DBSCAN (Density – based spatial social affair of organizations with tumult) gathering technique.

ALGORITHM USED:

By using this Haarcascade cnn algorithm .

output will be executed faster than clustering algorithm .

prediction and accuracy will be high in this process.

SYSTEM DESIGN**MODULES****LIST OF MODULES:**

- PREPROCESSING
- GLCM FEATURE EXTRACTION
- NEURAL NETWORK
- HAARCASCADE
- Preprocessing:



Image Pre-processing is a common name for operations with images at the lowest level of abstraction. Its input and output are intensity images. □ The aim of pre-processing is an improvement of the image data that suppresses unwanted distortions or enhances some image features important for further processing.

Image restoration is the operation of taking a corrupted/noisy image and estimating the clean original image. Corruption may come in many forms such as motion blur, noise, and camera misfocus. Image restoration is different from image enhancement in that the latter is designed to emphasize features of the image that make the image more pleasing to the observer, but not necessarily to produce realistic data from a scientific point of view. Image enhancement techniques (like contrast stretching or de-blurring by a nearest neighbor procedure) provided by "Imaging packages" use no a priori model of the process that created the image. With image enhancement noise can be effectively be removed by sacrificing some resolution, but this is not acceptable in many applications. In a Fluorescence Microscope resolution in the z-direction is bad as it is. More advanced image processing techniques must be applied to recover the object. De-Convolution is an example of image restoration method. It is capable of: Increasing resolution, especially in the axial direction removing noise increasing contrast.

GLCMM Feature Extraction

A Co-occurrence matrix (CCM) by calculating how often a pixel with the intensity (gray-level) value i occurs in a specific spatial relationship to a pixel with the value j .

By default, the spatial relationship is defined as the pixel of interest and the pixel to its immediate right (horizontally adjacent), but you can specify other spatial relationships between the two pixels.

Each element (i,j) in the resultant ccm is simply the sum of the number of times that the pixel with value i occurred in the specified spatial relationship to a pixel with value j in the input image. The number of gray levels in the image determines the size of the CCM.

NEURAL NETWORK

Neural Network (NN) and General Regression Neural Networks (GRNN) have similar architectures, but there is a fundamental difference: networks perform classification where the target variable is categorical, whereas general regression neural networks perform regression where the target variable is continuous. If you select a NN/GRNN network, DTREG will automatically select the correct type of network based on the type of target variable.

Haar – Cascades

Haar-like features are rectangular patterns in data. A cascade is a series of "Haar-like features" that are combined to form a classifier. A Haar wavelet is a mathematical function that produces square wave output.

Only those pixels marked in black or white are used when the corresponding feature is calculated. Since no objective distribution can describe the actual prior probability for a given image to have a face, the algorithm must minimize both the false negative and false positive rates in order to achieve an acceptable performance. This then requires an accurate numerical description of what sets human faces apart from other objects. Characteristics that define a face can be extracted from the images with a remarkable committee learning algorithm called Adaboost. Adaboost (Adaptive boost) relies on a committee of weak classifiers that combine to form a strong one through a voting mechanism. A classifier is weak if, in general, it cannot meet a predefined classification target in error terms. The operational algorithm to be used must also work with a reasonable computational budget. Such techniques as the integral image and attention cascades have made the Viola-Jones algorithm highly efficient: fed with a real time image sequence generated from a standard webcam or camera, it performs well on a standard PC.

The size and position of a pattern's support can vary provided its black and white rectangles have the same dimension, border each other and keep their relative positions. Thanks to this constraint, the number of features one can draw from an image is somewhat manageable: a 24×24 image, for instance, has 43200, 27600, 43200, 27600 and 20736 features of category. In practice, five patterns are considered. The derived features are assumed to hold all the information needed to characterize a face. Since faces are large and regular by nature, the use of Haar-like patterns.

RESULT AND ANALYSIS

Various experiments were conducted to propose an efficient way of managing the image file with image processing techniques. The results are extracted by comparing the efficiency in managing image files by existing method and the proposed method. Also the efficiency of various management techniques for managing image files is evaluated. The below results and discussions shows the various areas that are being improved or is much more efficient in the proposed system.



CONCLUSION

In this modern reduce the accidents rapidly the usage of vehicles has also increased tremendously. The cause of it is heavy traffic. In order to avoid this problem it is better that we flow new communication methods such as image processing based vehicle speed estimation and monitoring system using OPENCV.

By using this method we can get the details about information about vehicles in particular junctions through internet access. This is more beneficial for the emergency travelling

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