# Review on Vehicle Speed Detection Using Image Processing Techniques

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**Abstract – Image processing techniques have been applied to traffic scenes for a variety of purposes including: queue detection, incident detection, vehicle classification, & vehicle counting. In this paper, we present a new algorithm to estimate speed using a sequence of video images from an un-calibrated camera. The objective of research is to study&developTechnique forVehicle Speed finding Using frames of video handing out&to measurevehicle speeds with software algorithms, using only a single camera to obtainmonocular traffic video. Apparently, in order to calculatevehicle speed,vehicle should be firstly detected inobtained images. Thendistancevehicle passes through in a short period of time should be measured. There are many challenging problems in studying real traffic scenes within a complex background. Inside this note, efficient picture handing out techniques are applied to inter change analysis to estimate travel speed from image sequences of moving vehicles.**

**Index Terms – Problems, Vehicle, Estimate, Algorithm, Software.**

## 1. INTRODUCTION

Digital Image processing has been applied to traffic analysis in recent years, with different goals. In recent since picture handing out has been applied togroundof traffic research with goals that include queue detection, incident detection, vehicle classification,&vehicle counting.

This research explicitly recognizes that speed is an important parameter in traffic analysis. Relatively few efforts have attempted to measure speed by using video images from un-calibrated cameras. Algorithm for speed extraction first applies a series of operators to single images to create a set of enhanced images.

MOVING-EDGE DETECTION

Moving edge detection is applied to extractmoving parts from a complex background in an image sequence. The static background is then deleted to locatemoving objects. Thisresulted in a set of common binary masks for all vehicle. Since there is a background which containsmoving leaves. Further pre-processing&post-processing steps are involved in edge detection.

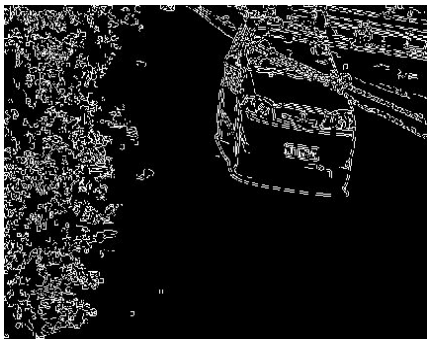

Figure 1.5: Edge Detected Images.

## 2. LITERATURE SURVEY

In moving edge picture very soon described, there are always space along edges. To obtain a profile of vehicle, we need to enhance moving edges. This enhancement uses morphological operator's dilation & erosion with an appropriate structural element. The result of in order applying dilation & erosion is to eraser specific picture features smaller than structural element without affectinglarge features of interest. Dilation&erosion are two basic morphological operations. Dilating an object is to translate all its points with regard to a structural element followed by union operation.

D.J. Dailey&L. Li (April 2000) proposed a approach forvehicle speed by processingframes ofvehicle&used sobel operator for edge detection in their paper titled "Video Picture handing out To build A Speedfeeler"Algorithm for feeler extraction first applies a chain of operators to single images to create a set of enhanced images.

He Zhiwei; Hangzhou Dianzi Univ., Hangzhou ; Liu Yuanyuan ; Ye Xueyi(dec 2007) proposed a approach titled name" SINGLE CAMERA VEHICLES SPEED MEASUREMENT" vehicle speed technique forvehicles by detecting them through their shinny surfaces in their experiment using a stationary camera, as shinny area is having different intensity values from background.

## 3. SPEED DETECTION

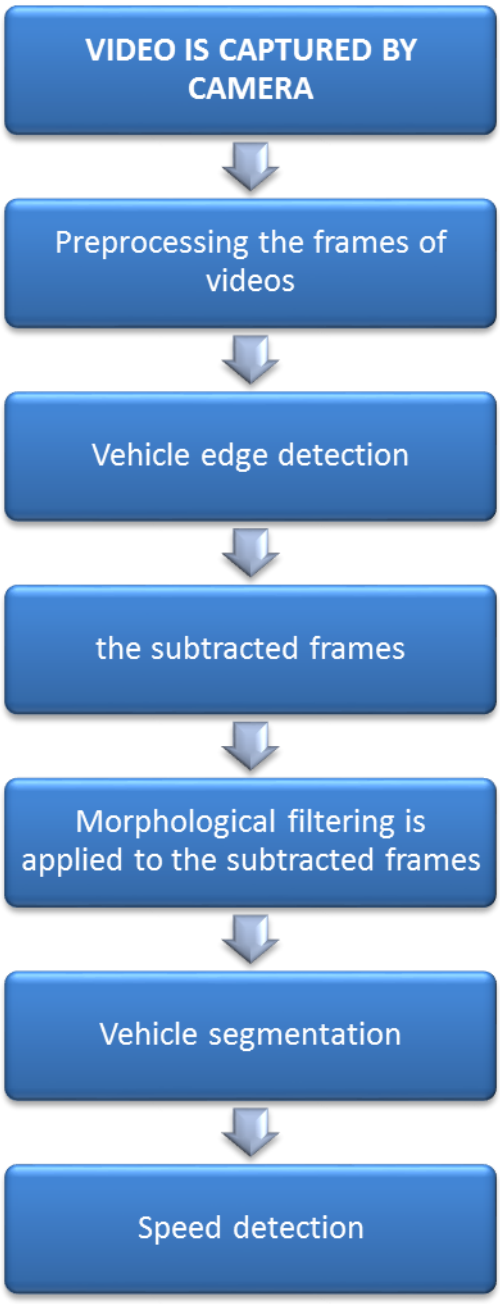


Fig .Display Of Speed Result

There are a significant number of different approaches for detecting speed. The operator considers is area pane inpicture&determinesaverage change of intensity resulting from shiftingwindow by a small amount in various directions inimage forvehicle pixels. In thisoutcome up to we track each vehicle&trace their centroid in upcoming frames to getspace travelled by that vehicle.In this advance we utilize array of structure to have centroids of vehicle. Vehicle is here into region of notice invideo their bounding related box is created by that we generatedcentroid ofbounding box.As new vehicle arrived we store its centroid value totracks.If invideo we have no. of vehicles then we have to track them all simultaneously. And we collect their centroidvalues intotrack structure that we created. And updatingcentroid of all vehicles simultaneously asnew frame arrived. We keep on updatingcentroid values until it is inregion of interest. The video is recorded using mobile camera having pixels. In pre-processing video has converted into frames. The various parameters such as number of frames, frame rate, colour format, frame size are extracted. There are total 372 frames in this video. It has frame rate 30 frames per second. The frame size is of 640x480 pixels. Also at this stage frames are converted into double data format i.e. required for future operation.

## 4. PROPOSED APPROACH

The captured video is converted into frames. Sincevideo had 15 frames per second. Reference frames are converted from RGB to greyscale images that reduce computation. After that we reducenoise if any noise is present invideo frames. In this we reducecomplexity of computation done in mapping stage as given below. And then we have donedivision of moving item in each frame with respect to theirinner background&then we calculateddisplacement of each moving object by tracking them individually.

ASSUMPTIONS

To create an algorithm to estimate speed from video images we make several assumptions to simplifyproblem:

1. The speed ofvehicles is finite. The hurry of a vehicle had both physical&legallimits .

2. The vehicle movement is smooth. There are no sudden changes of direction intime interval (330ms) between frames inimage sequence.

3. Motion is constrained toroad plane. Tracking of vehicles inimage sequence is a one dimensional problem.

4. The scale factor (feet per pixel) varies linearly alongdirection of vehicle travel. This assumption constrainsvehicles to be moving generally towardcamera.

With these assumptions,vehicles are treated as though they travel in one dimension along a straight line inimage.

## 5. CONCLUSION

Speed is detected for multiple vehicles by processingvideo frames. The video taken is of resolution 120*160 pixels with 15fps.Duringmapping process we transform3d view of real world coordinates into 2d camera coordinates. Then work is

done on each frame, here reference frames are converted into grayscale images from RGB that reducecomputation&we are able to detect multiple vehicles simultaneously by drawingbounding box surrounding to it.Results show thatproposed model gives relatively good performance. But occasions for bad weather such as heavy fog, weak illumination&night scenes&front mirror glare produce poor performance. The main problem under these conditions isinaccurate detection of vehicles as a result bounding box will not be created forconsecutive frames&if vehicle is not recognized by their bounding box then it is not possible to calculate their speed. And we will take care ofshadow emerged on tovehicles that produceserror rate in identification ofvehicle inframe.

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