Real World Automated Detection of Traffic Violation

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Abstract— The system which can be detecting red-light and lane change Violation is very useful for the traffic management. This paper presents a novel method for the red-light violation Detection using vehicles moving in the region of it mix when there causes any problem or any unexpected things of multiple vehicles using mean square displacement (MSD) to determine when rule is broken it is given use of image processing only to detected traffic signal without help of another other system. The experiment result shows there is high accuracy to detect both of violation. All vehicle showing behaviors will be known and recorded by aforementioned concept, then using the condition of the red-light time it will find vehicles when it will not follow rule of traffic or change their lane in the forbidden area. The determine of light is completely done by using technology called image processing using the brightness. That the method used is high accuracy, easy to implement and suitable for real-time violation detection.

Index Terms— violation, accuracy, mean square displacement, real time, forbidden.

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1 INTRODUCTION

The statistic from many countries showed that high percentage when the traffic rule is break then causes accident because driver change his side to driver disobeying or red light violating Based on observation, drivers often change lanes before the stop line various person established some technique to avoid it. That technique has image processing to find out traffic problem has many advantages, for example easy maintenance, high accuracy of detection, long life service, real-time detection and inexpensive.

2 RELATED WORK

        Chen and Yang proposed their algorithm for red-light violation detection by directly connect traffic signals from traffic signal box. That is a way to achieve high accuracy for traffic signal detection, but it is difficult to setup and always require hardware interface board or electronics interconnection.

Nelson and Andrew proposed the traffic light detection by using purely video processing and detecting the vehicles in the prohibited zone. When the red light was ON the system start recording to capture red-light violating vehicles. However, their system was unable to detect the transgression of vehicles before the stop line such as lane change violation. Because the lane-change violation often happened in the road junction in Bangkok, Thailand, the motorcycle always change their lane immediately before the road junction

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3 METHODOLOGY

3.1 MOTION DETECTION OPERATION
- There are two serial frames.
- One of or one block which content all that record the frames is analyzed by comparing with the threshold value.
- It has one limit that block must be length 3-pixel.
- This condition is firstly applied to each block two blocks are match with each other.

3.2 Left-Limit Selection
- Particularly technique takes grey value if it is above grey color value histogram of the window,   where there are approx. Zero edge points above this grey value.
- If that block has grey value it will remain as it is if it don't then move toward left side.
- This process is repeated for a large no time.

3.3 Threshold Method

- There are many numbers of frames for creating block parameters for a proper threshold value.
- It's horizontal and vertical limit is check.
- The frequency repeated by using medium filtering method and considering they are related to vehicles.
- Here applied next concept sums of points top and bottom.

3.4 Vehicle Detection Algorithm

- Following the application of the motion detection operation, a vehicle detection operation is applied on the profile of the unprocessed image.

- To implement the algorithm in real time, two strategies are often applied: key region processing and simple algorithms [8].

- Most of the vehicle detection algorithms developed so far is based on a background differencing technique, which is sensitive to variations of ambient lighting.

- The method used here is based on applying edge detector operators to a profile of the image edges are less sensitive to the variation of ambient lighting and are used in full frame applications (detection)[7].

- Edge detectors consisting of separable medium filtering and morphological operators, SMED (Separable Morphological Edge Detector) are applied to the key regions of the image. (The SMED approach is applied to each sub-profile of the image and the histogram of each sub-profile is processed by selecting dynamic left-limit value and a threshold value to detect vehicles.

- SMED has lower computational requirement while having comparable performance to other morphological operators [5].
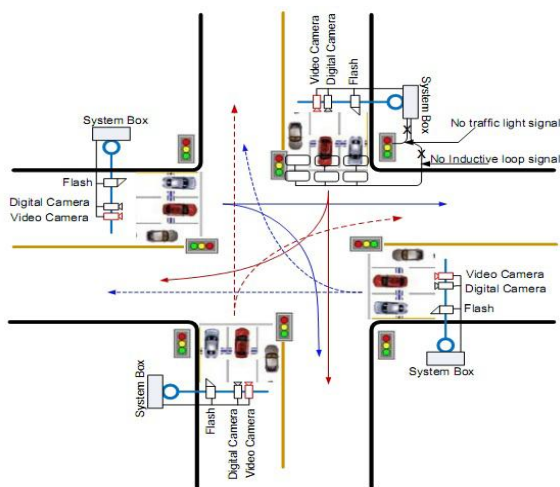
4. FIGURES

Fig 1. An overview of a purely video processing for red-light violation Detection system

5. CONCLUSION

The proposed method shows high performance in terms of accuracy for violation detection and computation so the system supply the completely image related processing with correct output for system is applied on all sub-profiles while the vehicle detection operation is only used when it is necessary.

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