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Factual Traffic Control Via Image Processing

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Abstract

Now a day the traffic jamming has become a more serious trouble which cannot be tolerated near the crossroads signals. Because of the population increment the traffic squashes are also increasing day by day. This is the most important reason which to considered for squashing of traffic and also observed that the traffic is enlarging more and more especially in the cities. This kind of problem is to be handled in a more intelligent way since the traffic is factual and it should be controlled using a technology.

An efficient system is planned for overbearing the traffic, by using image processing. Along the side of traffic light a camera will be positioned so that it can capture the true and factual images. A superior procedure using image processing is used to organize the position compensation of the traffic light. By using this way, we can avoid the time consumption of a green light and hence traffic overcrowding can be reduced in a much better way. In this model the real traffic is taken into consideration and hence the vehicle estimation is also trustworthy. This is implemented practically and visually and consequently it is much improved than the conventional systems which are based on metal content.

Keywords

Traffic, Jamming, Image processing, traffic light,Overbearing

I. Introduction

The efficient traffic management structure is needed to trace out the regular traffic jams at major junctions. Using this traffic management system we can eliminate the important excess of time and raise in fault levels [1][2]. The first and foremost origin which is leading to traffic squash is the high number of motor vehicle .The transport cannot be ignored which is a basis for the large traffic trouble [3]. Much difficulty is faced by the common bloke because of the traffic at the signals which is very horrible in the sun or of heavy rains. Many more number of alternate systems was implemented, but still cannot meet the requirement of a common man. [4][5].

The paper proposes an intelligent traffic management system using true time images based on image processing. Using canny edge detection technique all the image sequences which are commencing a camera are analyzed. The traffic is managed now powerfully by evaluating the numeral vehicles at the junction. In addition, an emergency vehicle is given the highest priority and the path is given to that vehicle.

Both the technologies like surveillance and traffic control are united for the improvement in the detection of vehicle at the junction [6] [7]. We are trying to weigh up this paper in the context of image processing for the traffic control.. Due to this manpower (traffic employees) requirement can be eliminated at the junctions and gives fruitful results This output is very precious for the development of road traffic. As an outcome the use of this technology is precious for the examination and performance development of road traffic.

Conventional methods used RFID (Radio Frequency Identification) to detect the urgent vehicles like ambulance [8].But it needs more hardware to implement using RFID technique. Many studies went to identify

the emergency vehicles by the scrutiny of sound ,but still it is effortless because of noise occurrence at every traffic signal junction.

In our model, to look the real traffic a camera is set on polls .To identify the vehicles and count up, the extracted Images video are analyzed. The time is fixed to each lane which depends on the signal series (We have taken for 5 minutes).For a four lane crossroads, for instance, if the figure of vehicles is set up to be 10, 20, 30 and 20, then time chosen to every lane is in the ratio of 1:2:3:2. The emergency vehicle situation is also taken into account at the crossroads. The way is given to that emergency vehicle, if such is identified.

Video has been analyzed and objects are identified by subtracting the background and static background. A fault is detected between a background of unvarying frame and the current one. To analyse a video based on Video-based technique the environments is essential keeping in view such as weather conditions, vary in lighting and movement. Therefore, a strong background subtraction model is essential to match with the environmental changes.

II.Proposed Model

Referring to the below fig:1 ,The Signal allotment division is approached in two ways ; first part is the reference image part where the image is considered with zero percentage of traffic density , processed and is readily available for the comparison purpose. The second part is the real time images and is processed with amount of traffic density.

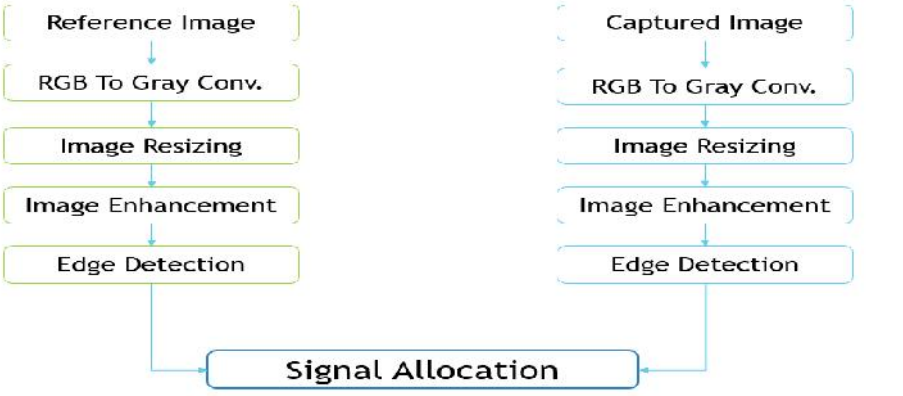

Fig:2.1 .Proposed Model

Both the signal allotment parts are of similar kind of steps, the first step is conversion from RGB to Gray-scale, and then we obtain the resized image according to the allocated standard size. Then the next step is image enhancement, where the image quality is adjusted and also checked. Edges are detected, and then the two images i.e the reference image and real time image are compared for the signal allocation accccordingly.

The principle idea of our system is to generate a new background picture using segmentation output by differencing the image with earlier extracted background. Now, for a new frame the new background is computed and is used for further process. Hence a change in background is detected and reduces the error. The objects and the edges are identified by applying threshold. Subsequently, a model was developed where the background is changing adaptively; The background and forefront has to be broken and this is done by pixel by pixel comparison and a new frame is detected in this manner.

Edge Detection: The next step is from the subtraction image we need to detect the boundaries. This is only done with the help of edge detection algorithm. The Canny edge detector is chosen because this is the widely and extensively used one. To emphasize the regions with high spatial derivatives it smoothens the image firstly and also detects the position of the image. It will suppress the pixels which are not at the extremity by

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tracking all along the regions. Lastly, by using hysteresis, two of the thresholds are taken into account and analyzed in such a way that if the magnitude is falling below the first threshold, it is put to be 0 and if it is above it is marked as a boarder. Another case arises here where it is set to 0 if the magnitude is sandwiched among the two thresholds with a condition that if there is away from pixel to pixel , except there is a path from this pixel to a pixel with a slope more than the second threshold. Then these above mentioned thresholds will be able to detect the tough (strong) and feeble (weak) edges

Background Subtraction: Later the boundary discovery, it is to be noted that the number of objects to be added as decided by the boundary detection technique. For the object and outline discovery there are many more algorithm recommended. But, in this work here we take in the Moore-neighborhood algorithm which is a similar one to the conventional methods. By selecting a random point this algorithm starts with. 'p' is examined in clockwise path and pixel by pixel it is making advancement. If this same is visiting for the next time then this algorithm will terminate (end) usually.

Therefore the contour (outline) of this model is detected by the black pixel walk. The effectiveness of the algorithm improves to a great extent and this is identified as Jacob's stopping criteria. This kind of work we have implemented in our proposed model to identify the number of cars in the picture (image) .The results went well and have done a good job to identify the objects. Labeling of the edges and corners is done with this and also able to know the size of the object. To get the density on every road at the crossroads We have used dissimilar size ranges .It will sort out the variety of vehicles.. Based on the calculated density and size of the vehicles the traffic light is then synchronized.

Emergency Vehicle Detection: This is detected by identifying the blinking occurrence of red light and it is compared with the usual emergency vehicle. Suppose, in case a red flare is detected, the next job is to find whether it is from an urgent situation vehicle or not. For different cases the red light flare is detected and those circumstances are shown below. Once they are satisfied, then in-between frames are scanned first for the nonattendance of the vehicle because, the path is reserved for the emergency vehicle only.

Night time circumstances: Intended for red light: R>230, G<250, B<250 In the midway frames: R<230, G>230, B>230 Day time circumstances: For red light flare (beacon): R>230, G<250, B<250 In the midway frames: R<230, G<230, B<230 If coordinated, the path is given to the emergency vehicle and the normal vehicles are overridden. Till the emergency vehicle accept the path ,the path is turned green..

III. Results& Discussions

To analyze the real traffic scene on a road a powerful system was developed. Referring to fig: (3) and (4), the subtracted image has only the forefront objects (vehicles).The vehicles count in the path can be bought out by means of image processing algorithms .In this case, we have considered for 3 vehicles. A video has been analyzed for the introduction of urgent situation vehicles through their blinking red lights.

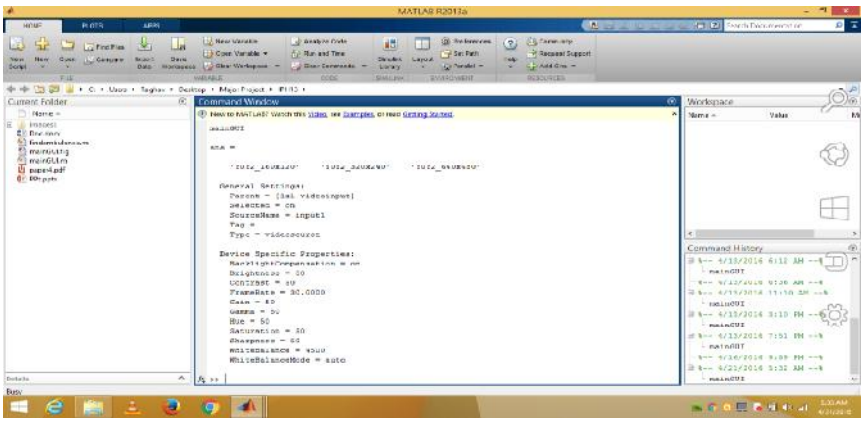

Fig.3.1.Result in Command Window

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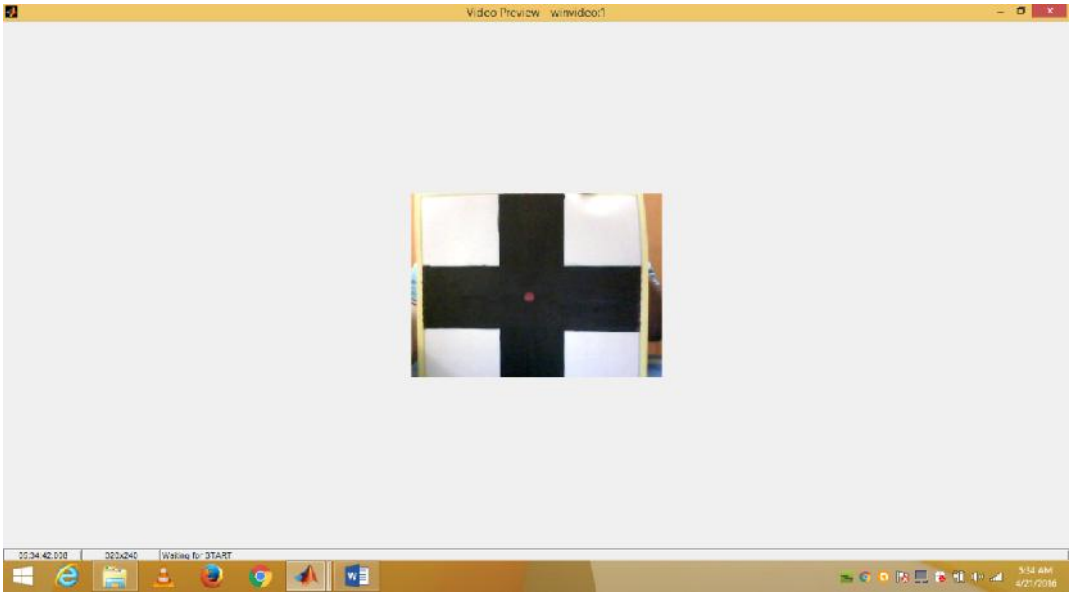

Fig.3.2. The Video Frame Input

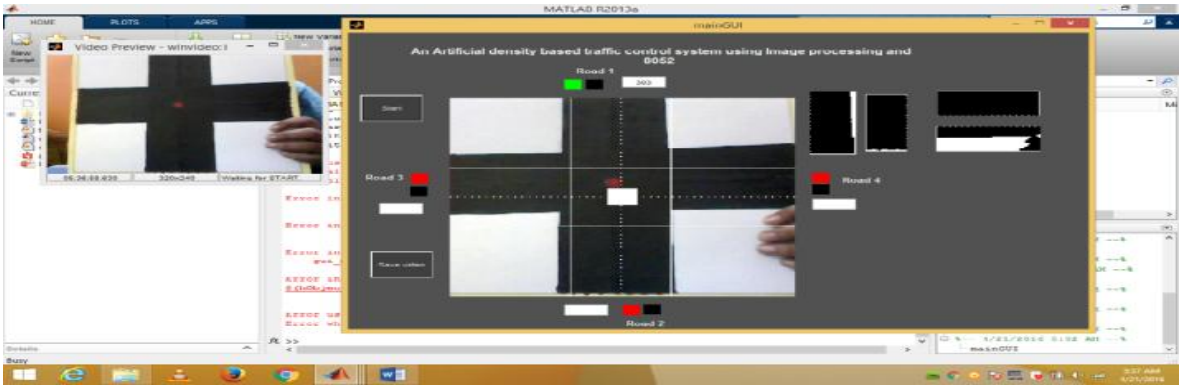

Fig.3.3.. GUI Output

IV. Conclusion:

We have implemented the work fruitfully for a factual image processing based traffic manager. As compared to other techniques this is the proficient scheme of traffic control management.. We have also implemented a scheme for urgent situation vehicle discovery based on image processing techniques. Our work mainly has an advantage of eliminating the extra hardware required as in the case of conventional methods.

V. Future Work

The focus shall be to put into practice the controller using DSP as it can avoid serious asset in industrial control computer while obtaining enhanced computational power and optimized system structure..

The focus also will be dropping the amount of errors which arise and make the scheme particular so that number of errors is decreased capably. We will also shell out concentration towards the computerization of entire system and also see that the first choice to imperative vehicles is given without difficulty.

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