International Journal of Advance Research In Science And Engineering ttp://www.ijarse.com
IJARSE, Vol. No.4, Special Issue (02), March 2015 ISSN-2319-8354(E)

A NEW REAR VIEW VEHICLE DETECTION AND TRACKING FOR DRIVERLESS VEHICLE ASSISTANCE SYSTEM

G.Subbammal[1], M. Sharon Nisha[2], J. A. Jevin[3]

[1]Student, [2]A.P/CSE

Francis Xavier Engineering College, Tirunelveli.(India)

ABSTRACT

Vehicle Driving Assistance system is mainly used for automatic vehicle driving without guidance of owner of the vehicle .Only the rear of the vehicle consists of salient parts such as license plate and rear lamps which gives the benefit of identifying which type of vehicle it is. An accurate vehicle detection and tracking can be done considering the distinct features such as color, texture and region of the rear of the vehicles. But various weather condition and lighting condition make it difficult for traffic surveillance. Moreover various vehicle appearances and poses make it difficult to train a unified detection model. When there is severe traffic congestion, the vehicles are merged into a single one. This makes the surveillance even more difficult for vehicle detection and tracking. To eradicate the above issues the detected parts as nodes , a graph is created and the vehicles are estimated using Extended Kalman filter making this model a best vehicle detection and tracking method.

Keywords: Traffic surveillance, extended kalman filter, vehicle driving assistance system, license plate

I. INTRODUCTION

Intelligent Transportation System(ITS) are used to reduce traffic jamming and to enhanced shipment data. Detection and tracking is one of the challenging technology for detect the vehicle parts which is normally done in tracking. It is mainly focus on the vehicle detection and tracking. A new rear view vehicle detection based on stationary camera which is used to capture the series of images. the vehicles are treated as an object that divides multiple relevant parts. Using MRF(Markov Random Field) the relevant vehicle parts are combined and measuring their spatial relationship. In this model(MRF) we identify the detected vehicle part as graph nodes.Number plate localization and rear lamp detection method is mainly used to revealing the measurement of the vehicle.

Number plate localization classified into two categories:

1] For private vehicle, white background with black script is used.

2] For commercial vehicle, Number plate has a yellow background and black scripts on it. Using Extended Kalman filtering, Rear lamps are detected. A new rear view vehicle detection and tracking method is used to improve the detection rate which identifies the vehicle parts normally detected by using Extended filter.

Markov Random Field method is used to image restoration and segmentation etc..The restored image is estimated by minimizing another MRF energy. Both synthetic images and real world images are showed. In this paper, we develop the accuracy of detection without the owner of the vehicle.

II.RELATED WORKS

Vehicle detection and tracking is based on the background modelling, secure lighting conditions. first the vehicles are treated as an object that object composed of multiple vehicle parts. The vehicle parts are contained using their color, region features.After vehicle detection the vehicle parts are tracked using kalman filter algorithm.

III.PROPOSED SYSTEM

Various weather and lighting conditions are also identify the accuracy detection rate which will notify the tracking method. A new rear view vehicle detection and tracking method is supposed to recognize the vehicles using part based model. In this model the vehicle is considered to be poised of a wheel, roof, window and other parts. Detection by tracking is also identify the region features.

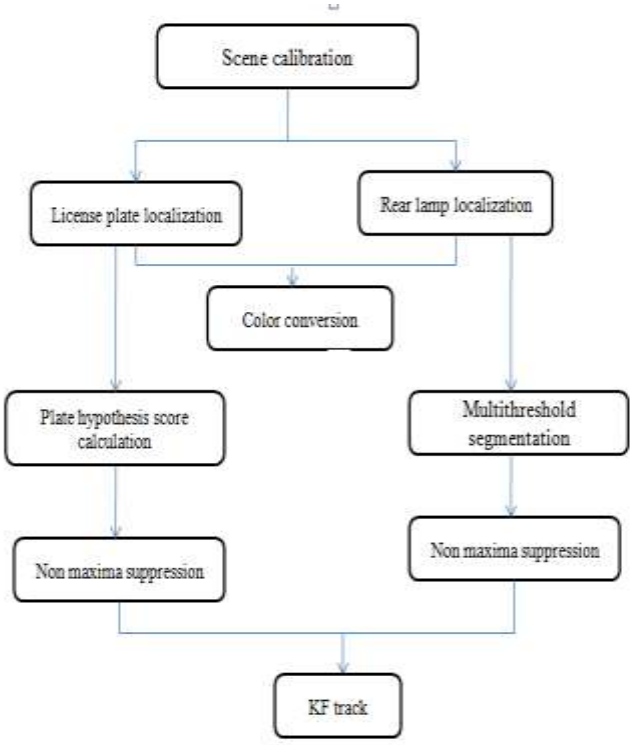

Fig 1.System Model For Vehicle Detetcion And Tracking

IV. A.NUMBER PLATE DETECTION

Number plate detection is a vital technology in ITS. The Number plate includes a blue background/White character plate ,a yellow background/black character plate, a white background/black and -red character plate, and a black background and white character plate. Number plate to be detected using some methods. [1] plate colour converting, which is used to convert the original image into R-G-B color image. The R-G-B color image is used to identify the background color and character color. [2]plate premise score computation, After color conversion the image slope was calculated for the number plate image.[3]cascade plate taming, to identify other regions in the vehicle except for the number plate regions.

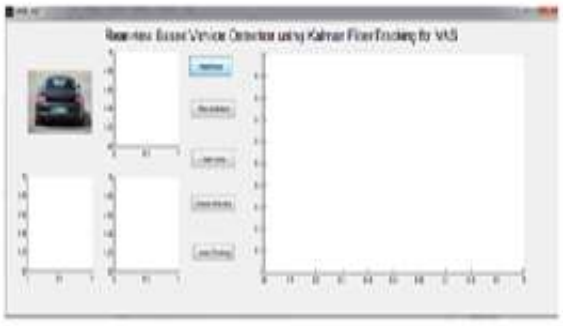

Fig 2.Read input image

Fig 3. color conversion

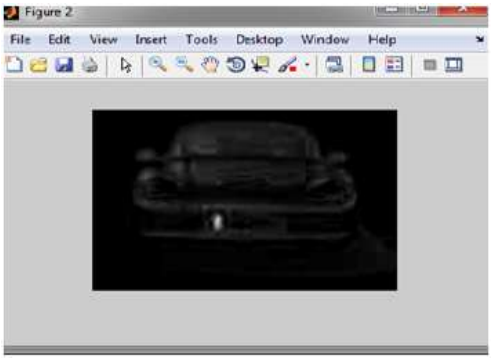

Fig 4.Gradient calculation

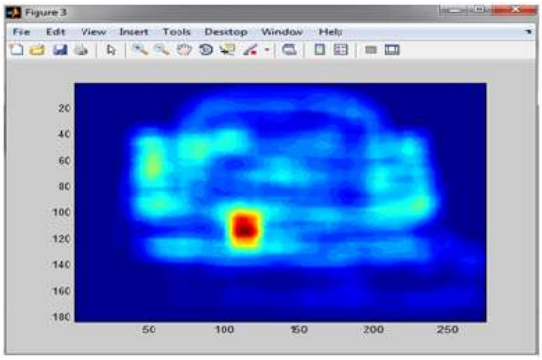

Fig 5.plate premise score computation

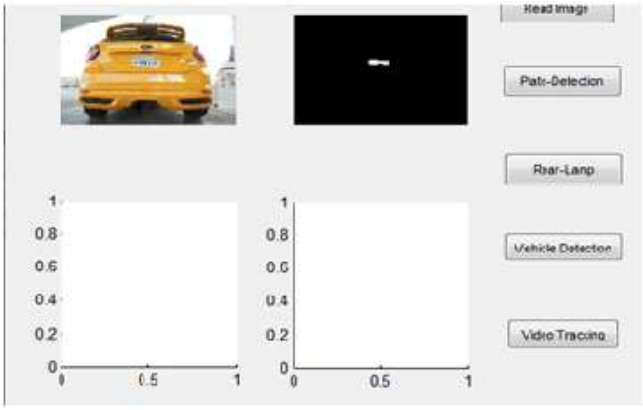

Fig 6.Number plate detection.

V. B.REAR LAMP DETECTION

Rear lamp detection is mainly focus on Multithreshold segmentation and connected component analysis. Original image is converted into R-G-B color image which satisfies some properties. The value of Red channel is large. The blue and green values are small. These values are identify the color conversion for the rear lamp. The R-G-B color image is converted into gray scale image. For Multithreshold segmentation is used to segment the rear lamp color image. For Connected component Analysis is to get the connected regions and select the rear lamp regions with areas. After get and select regions clear remaining regions and to analyze the next connected rear lamp region.

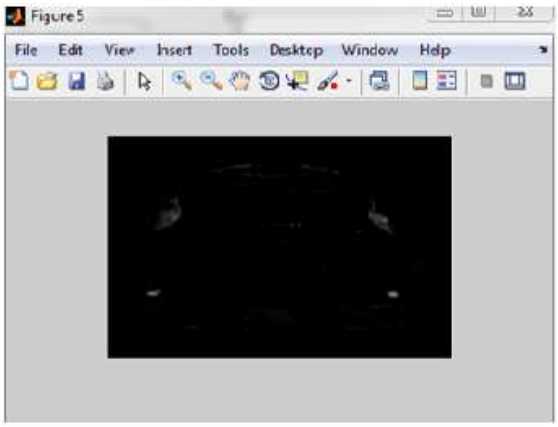

Fig 7.Color image conversion

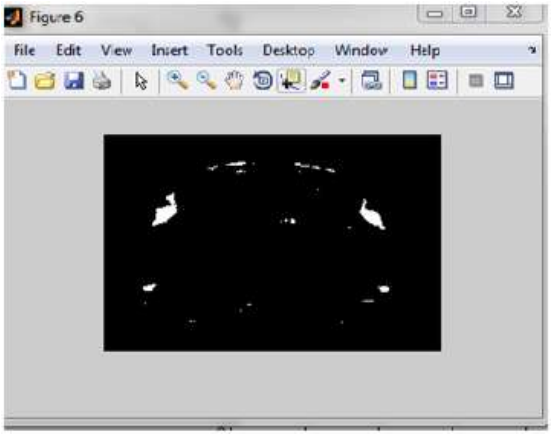

Fig 8.Connected component analysis

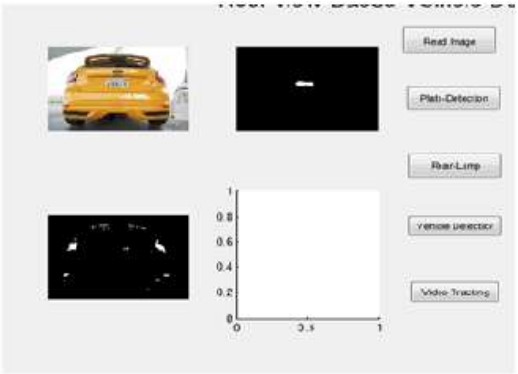

Fig 9.Rear lamp detection

VI. C.VEHICLE DETECTION

The vehicles are treated as an object that composed of multiple relevant parts such as number plate and rear lamp. Detected vehicle parts are combined into the vehicle which analyzes the number plate detection and rear lamp detection. Using MRF the detected relevant parts are as graph nodes. In the current frame one detected vehicles are initialized. Then, the neighboring rear lamps were added into the graph.

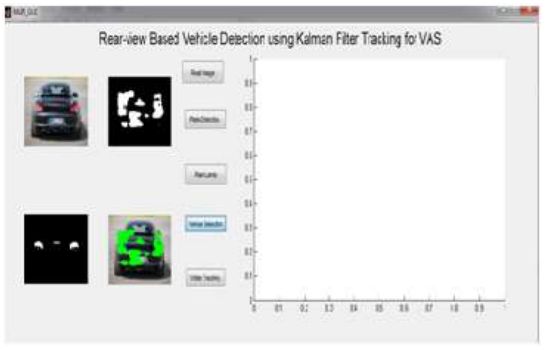

Fig 8.Vehicle detection

VII. D.VEHICLE TRACKING

After vehicle detection, tracking can be done using Extended Kalman Filter algorithm. Tracking is mainly used to identify the vehicle positions and to improve the detection rate. In poor lighting conditions, the detected vehicles are tracked using Extended Kalman filter algorithm.

Fig 11.vehicle tracking

VIII. CONCLUSION

In this paper, we have proposed a new rear view vehicle detection and tracking method based on camera. We localized vehicle parts such as Wind-screen, front cover, Number plate and rear lamp and to estimate the vehicle positions. Vehicle detection and tracking method could provide better results even in complex scenarios without the owner of the vehicle. In Future will localize more vehicle parts and to estimate the tracking positions.

REFERENCES

[1] Bouttefroy. P. L. M., Bouzerdoum A and Phung S. L., and Beghdadi A.,(2008) 'Vehicle tracking by non-drifting mean-shift using projective kalman filter',pp. 61–66.

[2] Cheon M., Lee W., Yoon C., and Park M., (2012)'Vision-based vehicle detection system with consideration of the detecting location,' Vol. 13, no. 3, pp. 1243–1252.

[3] Cheng H.-Y.,Weng C.-C., and Chen Y.-Y., (2012)'Vehicle detection in aerial surveillanceusing dynamic bayesian networks,' Vol. 21, no. 4, pp. 2152–2159.

[4] Cheon., M. Lee W., Yoon C., and Park M.,(2012),'Vision-based vehicle detection system with consideration of the detecting location,'Vol. 13, no. 3, pp. 1243–1252.

[5] Chen D.-Y., Lin Y.-H., and Peng Y.-J., (2012)'Nighttime brake-light detection by nakagami imaging,'Vol. 13, no. 4, pp. 1627–1637.

[6] Cucchiara R., Piccardi M., and Mello P., (2000)'Image analysis and rule-based reasoning for a traffic monitoring system,'Vol. 1, no. 2, pp. 119–130..

[7] Felzenszwalb P. F.,Girshick R. B., McAllester D., and Ramanan D., (2010)'Object detection with discriminatively trained part-based models,'Vol. 32, no. 9, pp. 1627–1645..

[8] Lin B.-F., Chan Y.-M., Fu L.-C., Hsiao P.-Y., Chuang L.-A., Huang S.-S., and Lo M.-F., (2012)'Integrating appearance and edge features for sedan vehicle detection in the blind-spot area,'Vol. 13, no. 2, pp. 737–747.

[9] Lam W. W. L., Pang C. C. C., and Yung N. H. C., (2007)'Vehicle-component identification based on multiscale textural couriers,'Vol. 8, no. 4, pp. 681–694.

[10] O'Malley R., Jones E., and Glavin M., (2010)'Rear-lamp vehicle detection and tracking in low-exposure color video for night conditions,'Vol. 11, no. 2, pp. 453–462