International Journal of Control Theory and Applications

ISSN : 0974–5572

Volume 9 • Number 40 • 2016

Detecting Night Time Vehicles by Grouping Headlights using SVM Classification

A. Saranya[a] Sharanyaa.S[b] and Maheswari. M[c]

[a]*Asst.Prof, Department of Software Engineering,SRM University, Kattankulathur, India*

E-mail: aksaranya@gmail.com

[b]*Asst.Prof ,Department Information Technology, DMI College Of Engineering, India*

E-mail: rnsharanyaa@gmail.com

[c]*Asst.Prof, Department of Software Engineering, SRM University, Kattankulathur, India*

E-mail: maheswari.m@ktr.srmuniv.ac.in

Abstract: Surveillance of traffic during night time is difficult the reason is backdrop interference and not fixed appearance. We proposed our paper for Identification of night time vehicle by gathering headlights utilizing svm classification. First, we utilize YCbCr shading space to identify vehicle headlights. At that point by characterization method we affirm whether its blob or not. After the accumulation of blobs from the picture, they are characterized by using svm classification. After the headlights identification we need to discover the likeness between the headlights by removing bright blobs utilizing svm classifier based detectors. At last matching is finished by morphological operations. Since the classifier is connected to vehicle competitors rather than considering the whole picture, it is exceptionally effective.

Keywords: *Vehicle identification, vehicle front lamp blending, vehicle fog light following, Classification strategy.*

1. NTRODUCTION

The critical thought of our work is to detect vehicles in the night time. This should be possible by gathering and tracking the headlights amid the night time travel. This procedure can be actualized by utilizing svm classifier. To begin with, we have need to prepare the SVM classifiers for headlights to recognize and reduce fake suggestion caused by light reflections from night time vehicles. Second, to take full benefit of the related framework for gathering and following the images. For gathering the data, movement component produced by tracking are utilized by headlights coupling. We practice a most extreme independent set framework for successful coupling, which is more solid than frequent. For tracking the vehicles, setting data provided by coupling is utilized by numerous object tracking. In proposed system we are using to detect the vehicle headlight using YCbCr color space are used to extract headlights. By grouping strategy to affirm the blob whether its blob are most certainly not. Machine-learning-based strategies have great segregation and better versatility. Here we are utilizing SVM arrangement to group the vehicles headlights from the identified blob to match and following.

2. ARCHITECTURE DIAGRAM

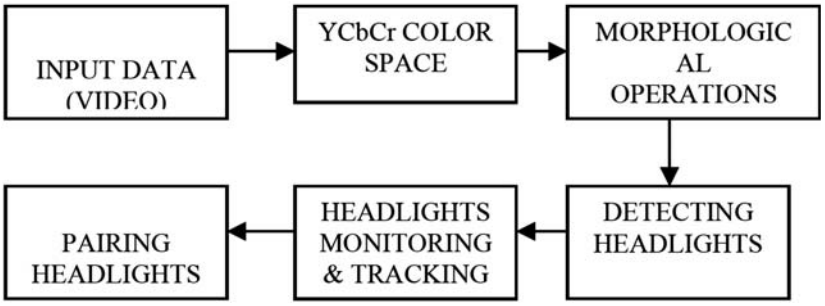

Figure 1

3. IMPLEMENTATION

In this paper we proposed three modules, they are

1. Preprocessing
2. Training and Classification
3. Tracking and Pairing

3.1. Preprocessing

In this module, take a Input Video and excavate the images from the video and provide the images to YCbCr color space for blob detection.

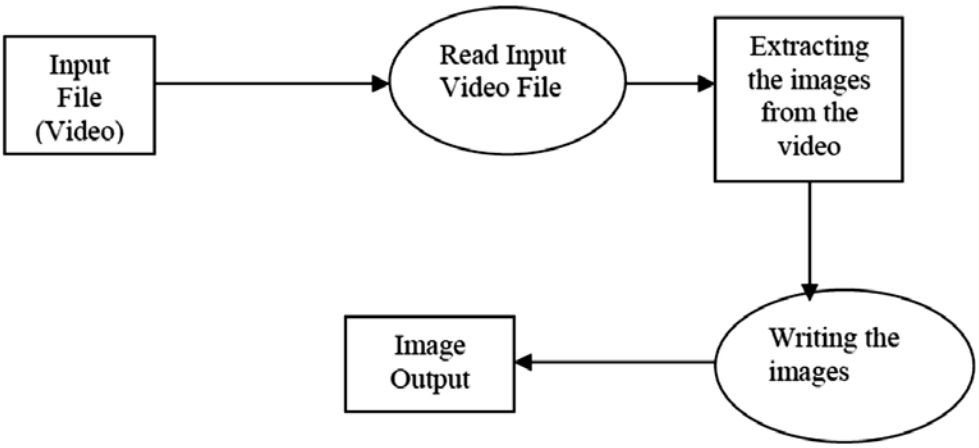

Figure 2

3.2. Training and classification

In this module, collect the blob from the image and take the feature from each and every blob and mention the class for every sample. And classify the sample using SVM Classification; it gives the output depending upon the feature. This is owing to two factors: the classifiers learned from training data remove most non-headlights and provide accurate headlights detection; context based tracking produces reliable headlight trajectories.

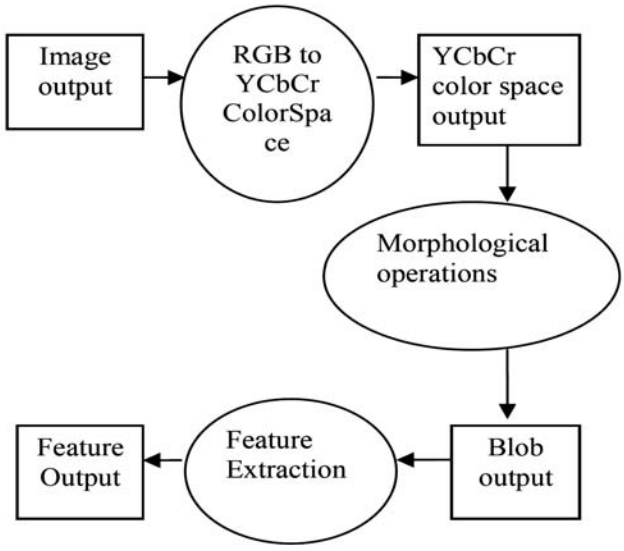

Figure 3

3.3. Tracking and pairing

After the headlights detection we have to find the similarity between the headlights. The first step in headlight detection procedure, take out the bright blobs from ROIs to facilitate SVM classifier-based detector. Blobs with high power are removed by threshold, the luminance and then seem to be connected regions. The objective of this step is to get all probable headlight people and to miss headlights as few as possible. Unfortunately, some false alarms are inevitably involved in. The second idea in this headlight detection process is to sort the extracted bright blobs as headlights or not. So the classifier is apply to vehicle candidates rather than scans the whole image, it is very efficient. Finally pairing of headlights is done by morphological operations.

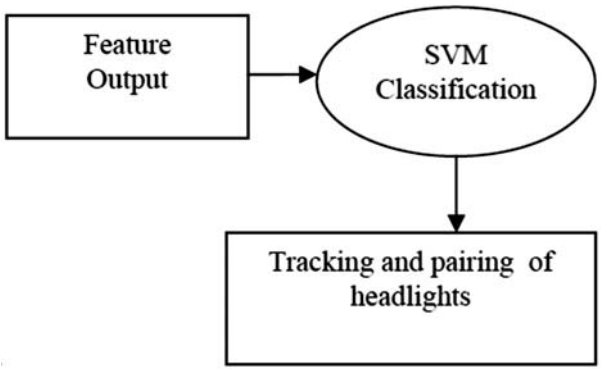

Figure 4

4. RESULTS

4.1. Input Video

Pre-processing phase of a picture can be considered as the establishment of this occupation. The arrangement for doing this pre-processing stage is to vacate the unsettled set and enhance the brightness and to modify the non-uniform lighting. Take a Input Video and Extract the pictures from the video.

Figure 5

4.2. Blob Detection

Blobs are only the shapes of the headlights. The headlights are uncovered as round shape though the reflections are fit as a fiddle. YCbCr color space is utilized to extract blobs.

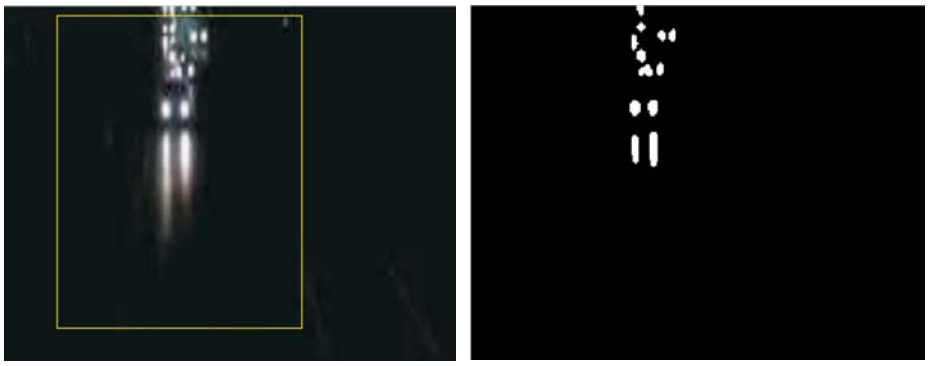

Figure 6

4.3. Headlights Pairing

After the headlights recognition we need to discover the similarity between the headlights by extricate bright blobs we utilize svm classifier based detectors for finding the similarity between headlights. At long last pairing is done by morphological operations.

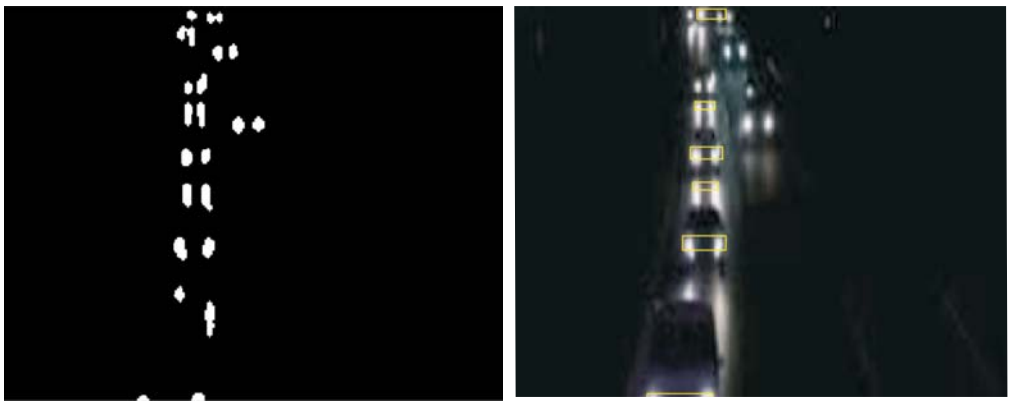

Figure 7

4.4. Listing number of vehicles

In the last stage by this thought the aggregate number of night time vehicles are identified and exhibited in the command window and we can discover, what number of vehicles are using the specific street and what number of vehicles are crossed the specific location in night time. In view of this property, if the vehicle movement is more, then the traffic signals also are implemented in the area during night time to maintain the traffic and avoid accidents.

5. CONCLUSION

The fundamental goal of our paper is recognizing and following the night time traffic system. In the first phase it sense the headlights by utilizing YCbCr color space thought ,and after that tracks the vehicles by coupling the vehicle headlights. The primary part of this proposed framework is its learning based detection, context-sensitive tracking and graphic model based headlight pairing. The proposed system is carefully evaluated on several nighttime traffic sequences involving environmental factor.

REFERENCES

[1] QiZou,HaibinLing,SiweiLuo,YapingHuang and MeiTian "Vigorous Nighttime Vehicles Detection by Tracking and Grouping Headlight". IEEE Trans. Intell.Transp.System vol. 16, May 2015.

[2] "Trafficsafetyfacts, 2012 Motor vehicle crashes: Overview," U.S. National Highway Traffic Safety Administration, Washington, DC, USA,2013.

[3] R.O'Malley, E.Jones and M.Glavin, "Raise light vehicle location and tracking in low-presentation shading video for night conditions," IEEE Trans. Intell. Transp. Syst., vol. 11, no. 2, pp. 453–462, Jun. 2010.

[4] M. Yang, Y. Wu, and G. Hua, "Setting mindful visual following," IEEE Trans. Design Anal. Mach. Intell., vol. 31, no. 7, pp. 1195–1209,Jul. 2009.

[5] K. Huang, L.Wang, T. Tan, and S.Maybank, "A constant protest detecting and following framework for open air night reconnaissance," Pattern Recognition, vol. 41, no. 1, pp. 432–444, Jan. 2008.